



ENVIRONMENTAL SERVICES PROGRAM

**Accomplishments, Highlights and Summary
Report for Fiscal Year 2011**



**MISSOURI
DEPARTMENT OF
NATURAL RESOURCES**

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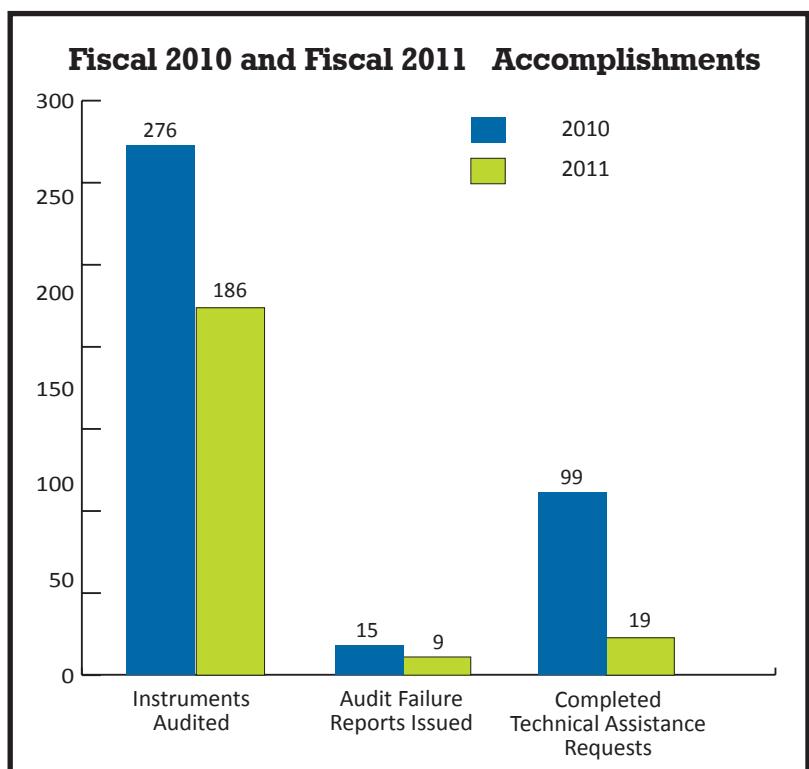
Air Quality Assurance Summary Report

Air Quality Assurance is responsible for planning, managing and performing all quality assurance activities in Missouri's ambient air monitoring network. This includes not only Missouri's network, but the local agency networks of Springfield, St. Louis City, St. Louis County and Kansas City. In addition, the unit oversees state-required networks operated by private industries.

Accomplishments

In fiscal 2011, Air Quality Assurance accomplished the following:

- Performance and system audits of instruments and organizations.
- Issued reports for each audit and audit failure reports when appropriate.
- Developed policies and procedures to meet the requirements of regulatory changes.
- Provided technical assistance to other agencies and the Air Quality Monitoring Section when resources allowed.
- Developed a cooperative work share plan with Environmental Protection Agency Region 7 personnel to meet state quality assurance responsibilities.



Number of Instruments Audited

Management decisions based upon budgetary shortfalls resulted in:

- Reduction of the number of instruments audited.
- Reduction in the frequency of some audits.
- Reduction of audits performed on analyzers operated by Springfield City Utilities.
- Other changes to the air monitoring network.



Audit Failure Reports Issued

The reduction of audit failure reports were due in part, to an overall reduction of audits, reduction and consolidation of the air network and improvements to quality control procedures.

Completed Technical Assistance Requests

Technical assistance activities were reduced.



Air Quality Assurance was asked to participate in workgroups formed by the Environmental Protection Agency's Office of Air Quality Planning and Standards, but resources were not available to comply.



Air Quality Monitoring Section Summary Report

In fiscal 2011, the Air Quality Monitoring Section operated up to 140 instruments (depending on the season) at approximately 40 locations around Missouri as part of a network to monitor air pollutants known to affect people's health. In addition, staff conducted special air quality studies.

The data from air instruments may be used to determine whether an area meets the National Ambient Air Quality Standards, if the public is being exposed to unhealthy conditions, to identify air pollution trends, to investigate citizen complaints, to determine the source of air pollution problems and to inform people of the current air quality in real time for major metropolitan areas within Missouri.

Accomplishments

In fiscal 2011, the section accomplished the following:

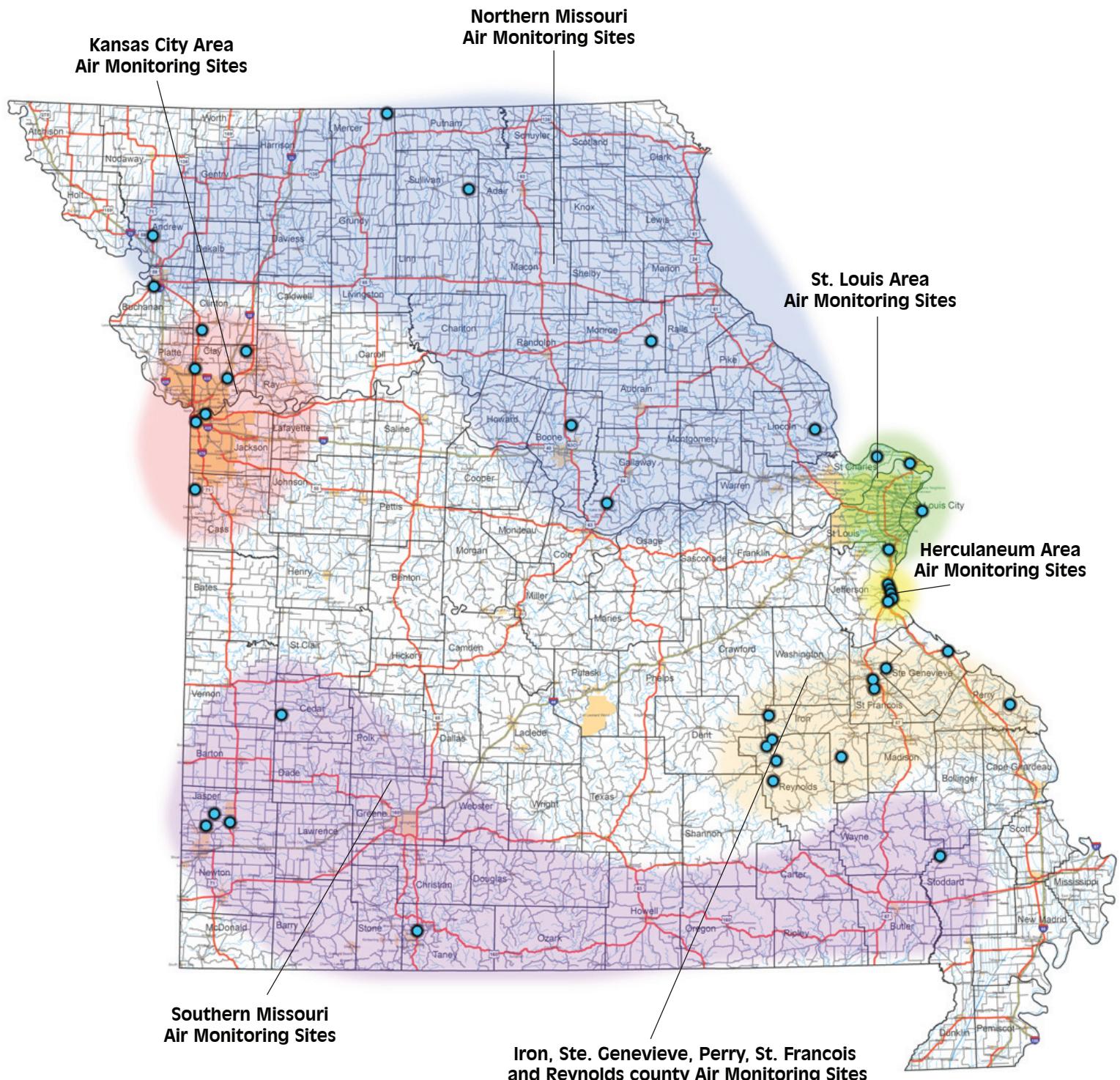
- Successfully collected, validated and reported data from air monitoring instruments across the state 365 days during the year.
- Began operating the instruments at the Blair Street site in St. Louis, obtained additional instruments and began monitoring for very low levels of certain pollutants at this location.
- Discontinued certain instruments and sites at the request of the Air Pollution Control Program to meet funding reductions.
- Relocated the St. Louis web camera that shows visible air pollution. Trees had grown up at the previous location and the view of downtown was obstructed, so the web camera was moved.
- Worked on optimizing the solar energy system at St. Joe State Park and replaced the original propane generator that could not be repaired further.
- Obtained equipment and a contractor for mercury deposition monitoring at Ashland and obtained a new rain gauge for mercury deposition monitoring at Mingo Wildlife Refuge.
- Moved the Van Brunt particulate sampler to Front Street in Kansas City.



- Moved the Bixby West lead sampler to a new location after the property was sold.
- Reviewed and updated the section's 48 Standard Operating Procedures.
- Prepared to assist Information Technology Services Division staff with grant work related to submitting air quality data to the Environmental Protection Agency's data base through the Exchange Network.



Air Quality Monitoring Sites - Fiscal 2011



Environmental Services Program

Air Monitoring Sites and Pollutants Monitored

Kansas City Area Air Monitoring Sites		
Site Names	Pollutants Monitored	Site Status at end of Fiscal 2011
Watkins Mill State Park, Lawson, Clay County	Ozone (O3)	Active March 1- Oct. 31
Liberty, Clay County	Ozone (O3), Inhalable Particulate (PM2.5)	Active
Trimble, Clinton County	Ozone (O3)	Active March 1- Oct. 31
Rocky Creek, Clay County	Ozone (O3)	Active March 1- Oct. 31
Troost, Kansas City, Jackson County	Sulfur Dioxide (SO2), Inhalable Particulate (PM2.5), Inhalable Particulate (PM10), Nitrogen Dioxide (NO2)	Active
Front Street, Kansas City, Jackson County	Inhalable Particulate (PM10)	Active
Richards Gebauer South, Cass County	Ozone (O3), Inhalable Particulate (PM2.5)	Active

St. Louis Area Air Monitoring Sites		
Site Names	Pollutants Monitored	Site Status at end of Fiscal 2011
Orchard Farm School, Orchard Farm, St. Charles County	Ozone (O3)	Active March 1- Oct. 31
Highway 94, West Alton, St. Charles County	Ozone (O3)	Active March 1- Oct. 31
Arnold West, Jefferson County	Ozone (O3), Inhalable Particulate (PM2.5)	Active
Mound Street, St. Louis City	Formaldehyde, Benzene, Toluene, Mercury	Active
Blair Street	Carbon Monoxide Trace (CO Trace), Sulfur Dioxide Trace (SO2 Trace), Ozone (O3), Reactive Oxides Of Nitrogen (Noy) , Black Carbon (BC), Inhalable Particulate (PM2.5 and PM10), Carbonyl, Hexavalent Chromium (Cr 6+) , Volatile Organic Compounds (VOCs), Semi- Volatile Organic Compounds (SVOC)	

Herculaneum Area Air Monitoring Sites		
Site Names	Pollutants Monitored	Site Status at end of Fiscal 2011
Dunklin H.S., Herculaneum, Jefferson County	Lead (Pb)	Active
Mott Street, Herculaneum, Jefferson County	Sulfur Dioxide (SO2), Lead (Pb), Metals	Active
Pevely, Herculaneum, Jefferson County	Lead (Pb)	Active
Sherman, Herculaneum, Jefferson County	Lead (Pb)	Active
Pevely North, Herculaneum, Jefferson County	Lead (Pb)	Active

Iron, Ste. Genevieve, Perry, St. Francois and Reynolds County Air Monitoring Sites		
Site Names	Pollutants Monitored	Site Status at end of Fiscal 2011
Farrar, Perry County	Ozone (O3)	Active March 1- Oct. 31
Bonne Terre, Ste. Genevieve County	Ozone (O3)	Active March 1- Oct. 31
Glover, Iron County	Lead (Pb)	Active
Park Hills, St. Francois County	Lead (Pb)	Active
St. Joe State Park, St. Francois County	Lead (Pb)	Active
Buick NE, Iron County	Lead (Pb)	Active
Oates, Iron County	Lead (Pb)	Active
Fletcher, Reynolds County	Lead (Pb)	Active
Bills Creek, Reynolds County	Lead (Pb)	Active
Corridon, Reynolds County	Lead (Pb)	Active

Southern Missouri Air Monitoring Sites		
Site Names	Pollutants Monitored	Site Status at end of Fiscal 2011
El Dorado Springs, Cedar County	Inhalable Particulate (PM 2.5), Ozone (O3)	Active
Mingo Swamp, Stoddard County	Mercury deposition, Haze Camera	Active
Alba, Jasper County	Ozone	Active March 1- Oct. 31
Carthage, Jasper County	PM10	Active
Branson, Taney County	Ozone	Active March 1- Oct. 31
Ste. Genevieve, Ste. Genevieve County	Inhalable Particulate (PM2.5)	Inactive

Northern Missouri Air Monitoring Sites		
Site Names	Pollutants Monitored	Site Status at end of Fiscal 2011
Green City, Sullivan County	Hydrogen Sulfide (H2S), Ammonia (NH3)	Inactive
St. Joseph Pump Station, St. Joseph, Buchanan County	Inhalable Particulate (PM10), Inhalable Particulate (PM2.5)	Active
Savannah, Andrew County	Ozone (O3)	Active March 1- Oct. 31
Finger Lakes State Park, Columbia, Boone County	Ozone (O3)	Active March 1- Oct. 31
New Bloomfield, Callaway County	Ozone (O3)	Active March 1- Oct. 31
Mark Twain State Park, Stoutsville, Monroe County	Ozone (O3), Inhalable Particulate (PM10)	Active
Foley, Lincoln County	Ozone (O3)	Active March 1- Oct. 31
Mercer, Mercer County	Hydrogen Sulfide (H2S), Ammonia (NH3)	Inactive



Chemical Analysis Section Summary Report

The Chemical Analysis Section serves as the State of Missouri Environmental Laboratory. This section provides analytical testing and support vital in protecting Missouri's residents and natural resources. Chemists and staff in the section use their expertise and state of the art instruments to identify and confirm various contaminants, both natural and man-made. These contaminants include inorganic analytes, organic compounds, synthetic organic compounds, heavy metals and biological contaminants that may affect health, water quality and natural resources.

The chemical analysis section provides the data necessary to evaluate and make decisions concerning the air and water quality in Missouri. In addition, the section also performs drinking water testing, which includes physical properties, metals, inorganic nonmetallic constituents, aggregate organic constituents and organic compounds.

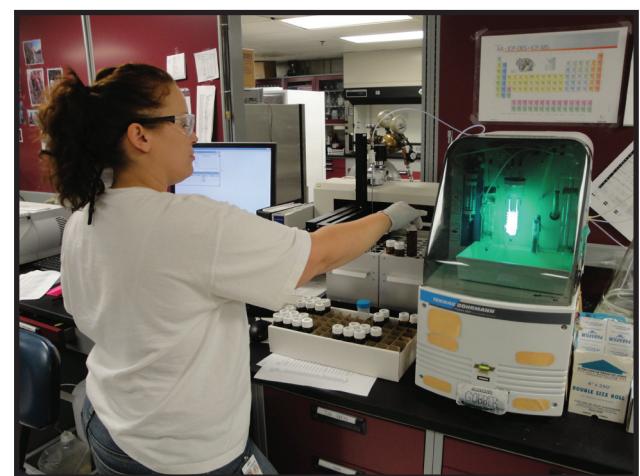
Accomplishments

In fiscal 2011, the Chemical Analysis Section conducted the following work and service:

- Performed chemical analysis on more than 25,100 samples that included more than 74,000 individual tests and 315,600 individual parameters (analytes). This analytical work included samples from the following agencies:
 - Division of Environmental Quality: Air Pollution Control Program, Hazardous Waste Program, Solid Waste Management Program, Public Drinking Water Branch and Water Pollution Control Branch, Environmental Emergency Response, Water Quality Monitoring Section.
 - Division of State Parks.
 - Division of Geology and Land Survey.
 - Missouri Department of Conservation.
 - Missouri Department of Transportation.
 - Missouri Department of Health and Senior Services.
- Performed chemical analysis on 5,000 lead and copper samples for the Public Drinking Water Branch as part of the Environmental Protection Agency's Lead and Copper Rule. This project required coordinating sample collection, sample container shipping and sample receipt performed during a three-month period during the summer; the actual analysis took an additional three months to complete.



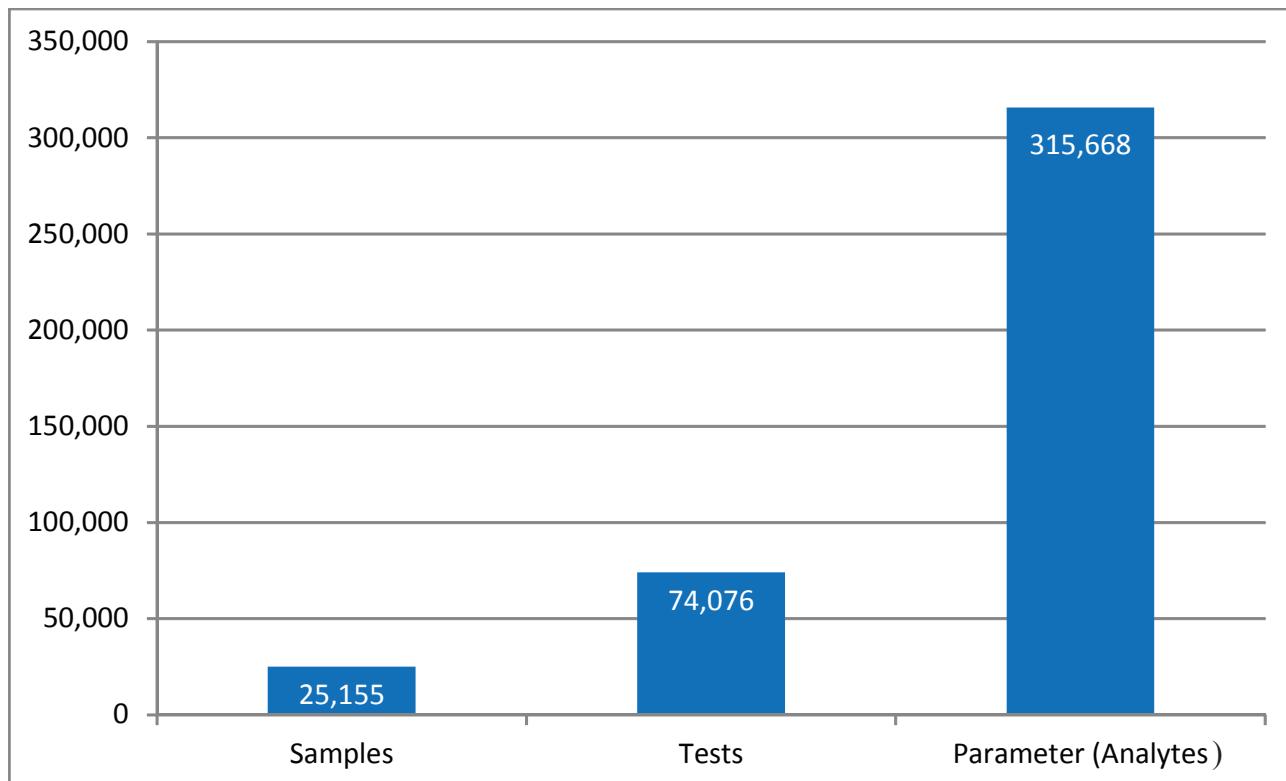
- Retained EPA required certification for drinking water chemical analyses as requested by the Public Drinking Water Branch. This included participating in an annual proficiency testing study for each parameter from a certified proficiency testing provider.
- Continued work on the two-year project for the Water Pollution Control Branch using American Recovery and Reinvestment Act money. This project involved testing in several areas of the laboratory, including the wet chemistry unit. Work began in May 2010 and continued through September 2011.
- Continued to provide technical assistance to our department programs, other state agencies and other laboratories as needed. Such assistance is mostly provided by phone or email and may concern clarification or understanding of a method used at the laboratory, or guidance concerning an acceptable Environmental Protection Agency analytical method.
- Continued to work toward implementing a new method for the Air Pollution Control Program. This new air filter testing method for lead particles in the air by inductively coupled plasma-mass spectrometry included coordination and discussion with an Environmental Protection Agency development laboratory and the Air Pollution Control Program. Following this initial work, we began the implementation process of the actual method into our laboratory. Testing using this new method began with the July 2011 air filters.
- Purchased new water filtration systems for the Wet Laboratory, Metals Laboratory and Extractables Laboratory. These units purify tap water to make Type I and Type II laboratory water used for analytical testing in each laboratory. The Extractables Laboratory also purchased two additional extraction units, allowing greater through-put of samples during busy times. The filtration systems and extraction units were purchased using BASF™ settlement monies.
- Provided water sample results to clients and the public Monday through Friday through the department's website at www.dnr.mo.gov/asp/esp/lims/select.asp.
- Continued to provide a laboratory certification program for drinking water and acting as the state's primacy laboratory for chemical analysis. The laboratory certification program required our laboratory certification officers to make on-site audits at Missouri laboratories and to provide reciprocal certification for non-Missouri laboratories.



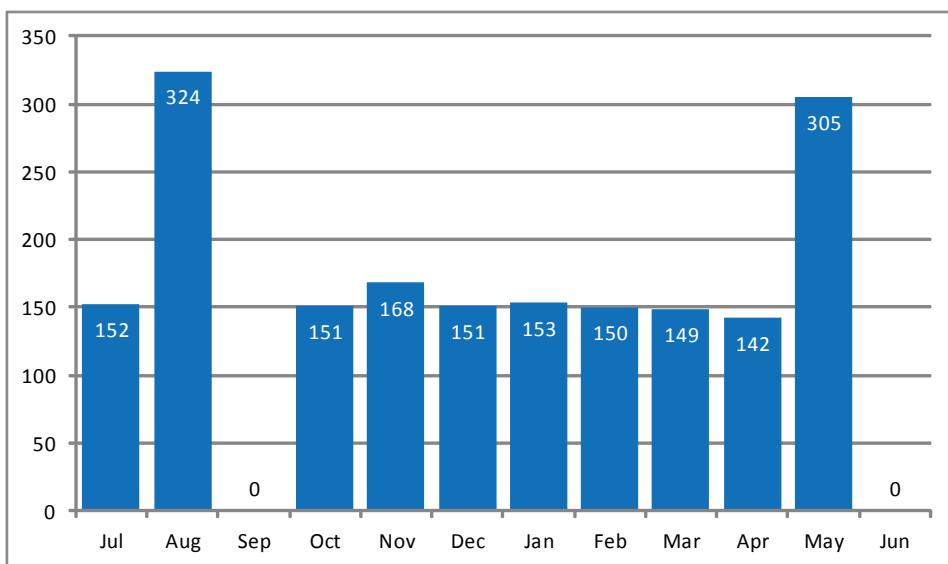
Missouri Laboratories	Reciprocal Laboratories (non-Missouri)
Chain of Rocks (St. Louis) – On-site Fiscal 2011 City Utilities of Springfield Howard Bend (St. Louis) – On-site Fiscal 2011 Kansas City Water Services TestAmerica (St. Louis)	ALS Environmental Division American Water - Central Laboratory Environmental Science Corporation Fargo Cass Public Health Environmental Laboratory National Testing Laboratories Ltd. Pace Analytical Services Inc. PDC Laboratories Inc. Underwriters Laboratories Inc.

- Expedited sample analysis of drinking water, surface water, soil and materials in order to provide data for priority health and environmental assessments from various sites including:
 - Compass Plaza (Rogersville) – Testing for Trichloroethene.
 - City of St. Louis Police Department – TO-15 testing (Volatile testing from an evidence canister) used for a vehicular manslaughter case.
 - Lee Chemical – On-going testing for the Hazardous Waste Program.
- Continued to use the early notification system for test results exceeding Environmental Protection Agency-defined maximum contaminant levels and action levels for all applicable drinking water analytes. This notification system is similar to the notification developed for reporting E. coli results exceeding established levels. These notifications are provided via email to groups with direct responsibility for these analytes of interest. For example, benzene has an maximum contaminant level of 5 ug/L in drinking water. Therefore, if the Chemical Analysis Section management confirms a sample with a result that meets or exceeds 5 ug/L, an email notification will be sent within 15 minutes to the Public Drinking Water Branch.
- Continued to use the Sample Condition Upon Receipt Anomaly Report to document issues with samples upon receipt at the laboratory. A copy of each report is sent to the appropriate project manager or regional office director and the Division of Environmental Quality administration in an effort to clarify issues that will better serve our customers.
- The following graphs detail the numbers of samples analyzed per month for each of the respective programs.
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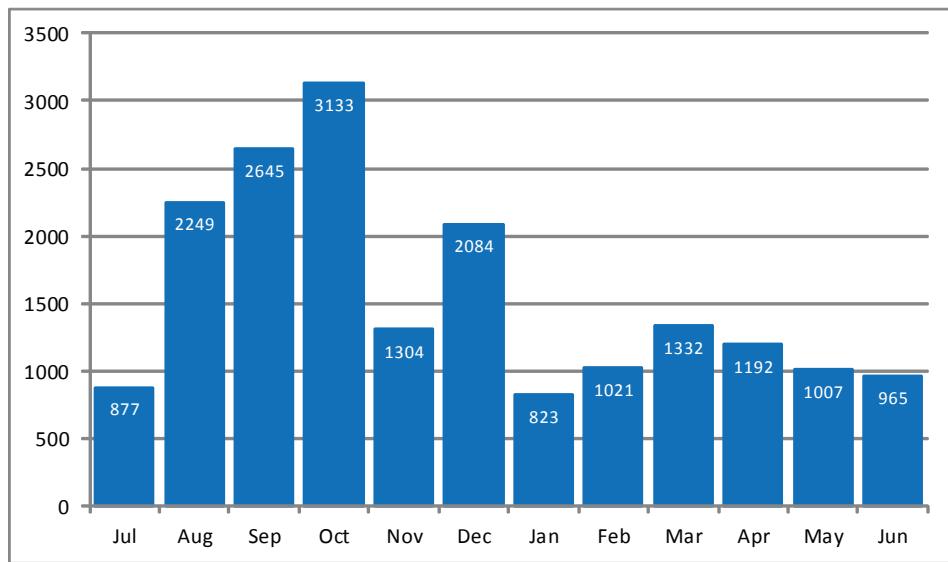
Number of Samples, Tests and Perimeters - Fiscal 2011



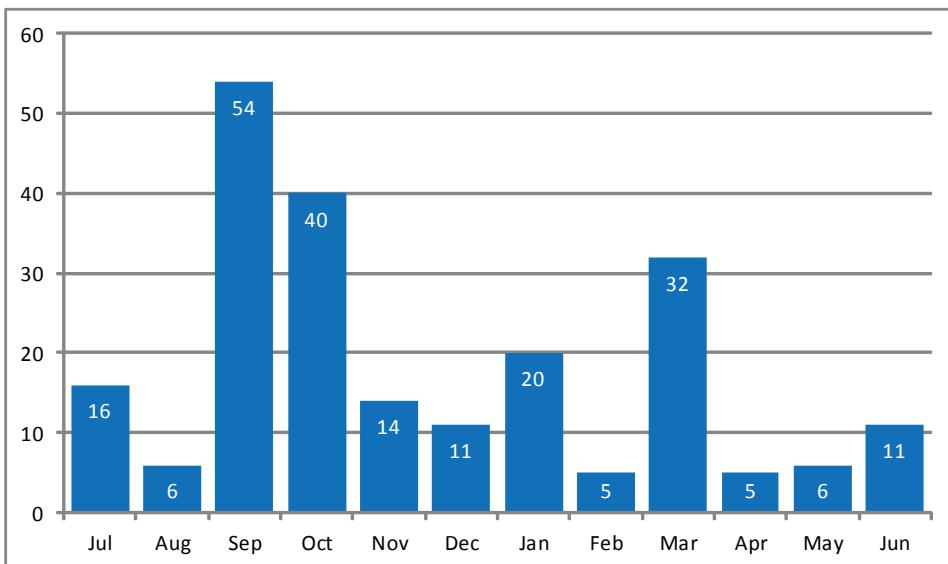
Air Pollution Control Program Samples per Month - 1,845 Total



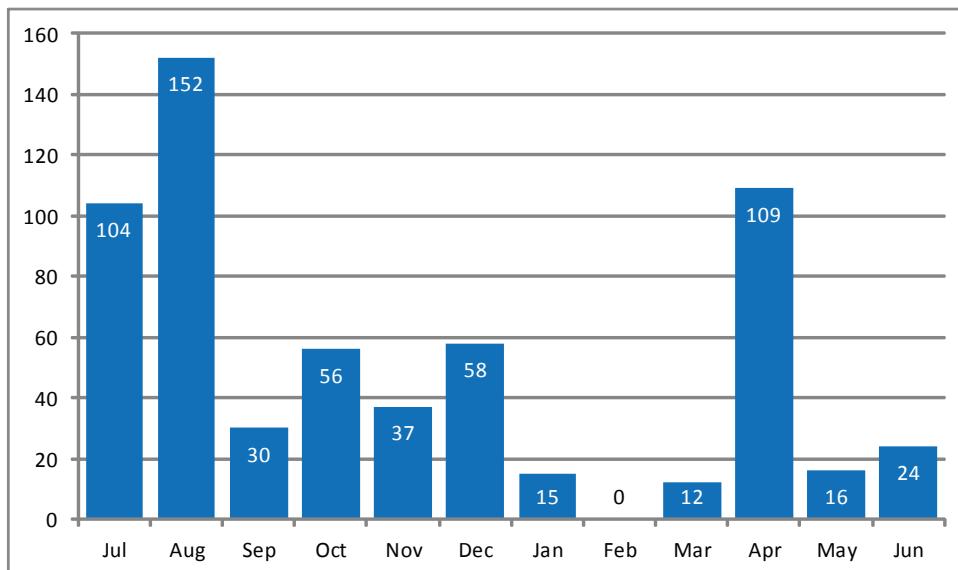
Public Drinking Water Branch Samples per Month - 18,632 Total



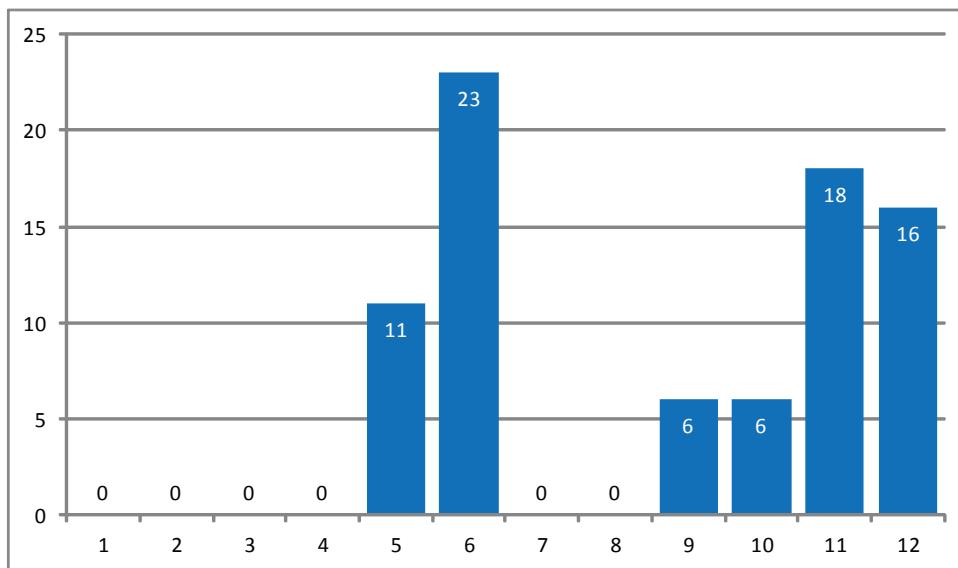
Environmental Services Program/Environmental Emergency Response/ Water Quality Monitoring Section Samples per Month - 220 Total



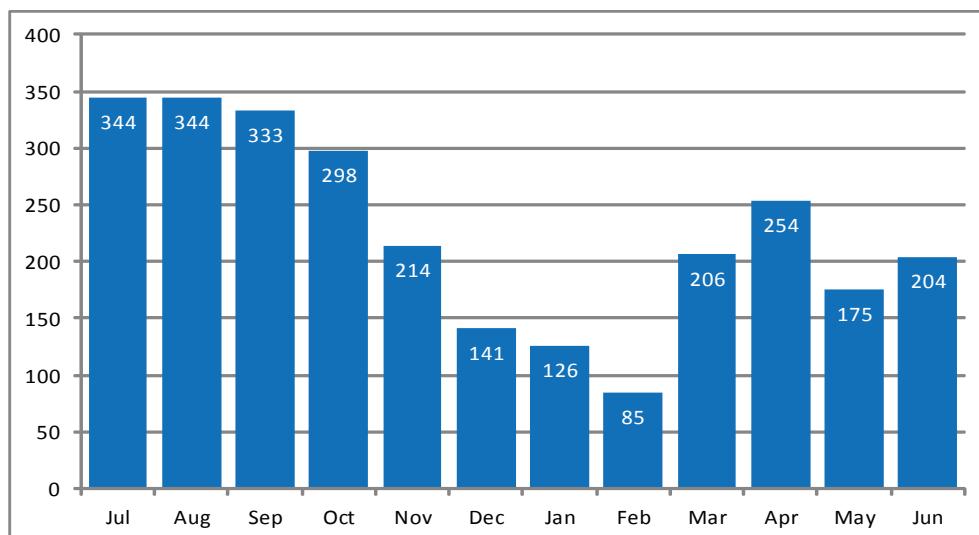
Hazardous Waste Program Samples per Month – 613 Total



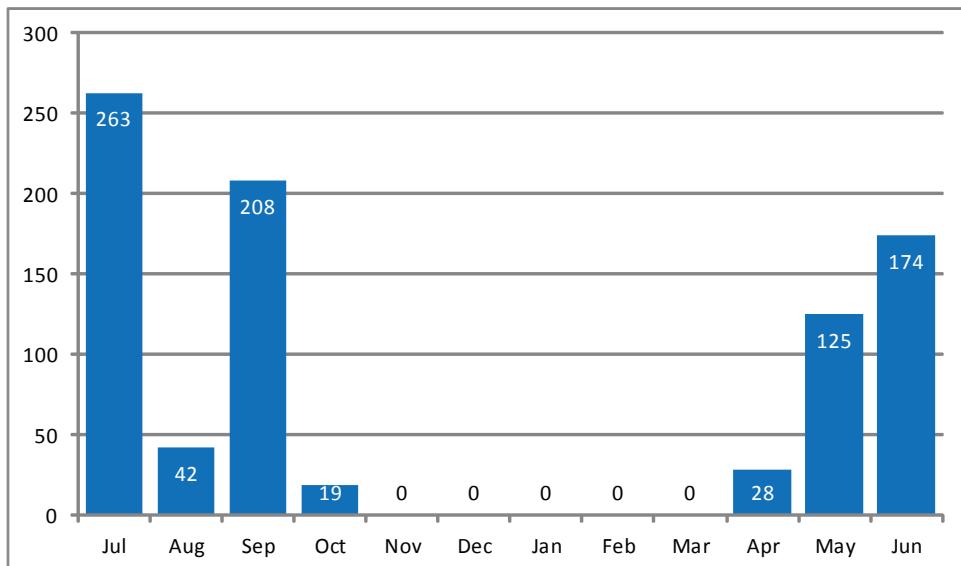
Solid Waste Management Program Samples per Month – 80 Total



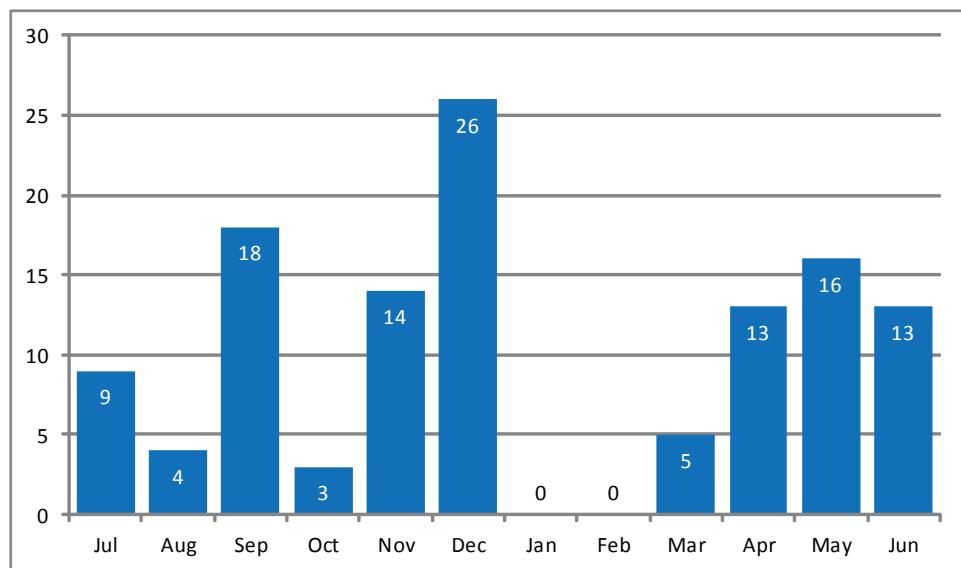
Water Pollution Control Branch Samples per Month – 2,724 Total



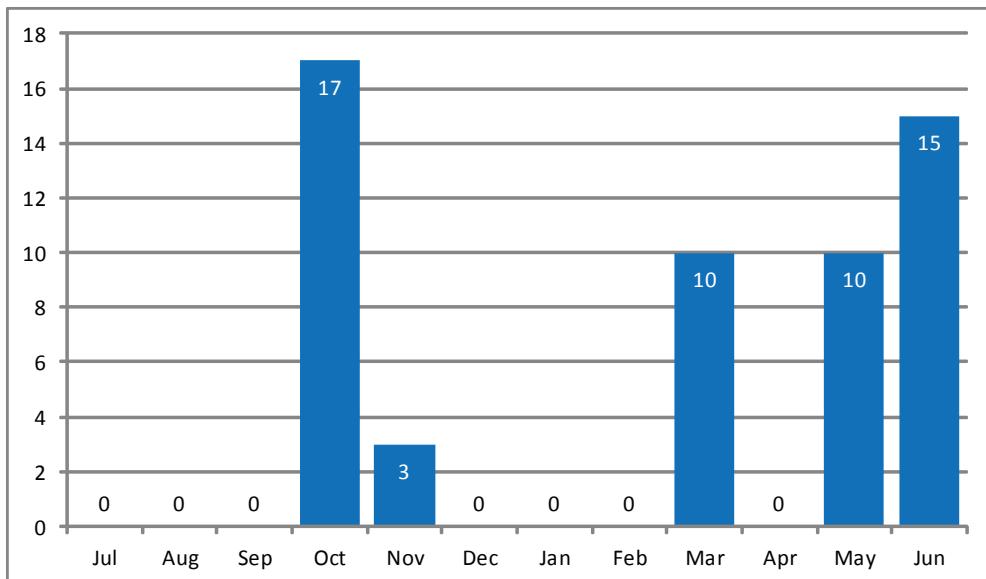
Division of State Parks Samples per Month – 859 Total



Division of Geology and Land Survey Samples per Month – 121 Total



Laboratory Proficiency Testing Samples per Month – 55 Total





Environmental Emergency Response Section Summary Report

The Environmental Emergency Response Section is the department's front line of defense against significant and imminent hazardous substance releases, natural or man-made disasters, or homeland security threats that impact public safety and the environment. This section is primarily responsible for fulfilling the department's duties contained within Revised Missouri Statutes, Chapter 260, sections 260.500 through 550, commonly referred to as the "Spill Bill." Responsibilities include responding to address any chemical, petroleum or other material spilled on to the land, water or atmosphere that may impact the public health and safety and/or the environment.

Twelve duty officers monitor the statutorily-mandated Spill Reporting Hotline 24 hours a day, seven days a week, 365 days a year, on a

rotating basis. During normal business hours, duty officers staff the Incident Command Center located at the Environmental Services Program in Jefferson City. After normal business hours, the Spill Reporting Hotline is answered from the duty officer's residence.

In addition to the 12 duty officers, 10 staff are stationed at six different locations throughout Missouri. State On-Scene Coordinators conduct operations out of these offices and are dispatched via the 24-hour Spill Reporting Hotline by a duty officer in Jefferson City.

Additional information about Emergency Response is available at www.dnr.mo.gov/env/esp/esp-eer.htm.

Environmental Emergency Response Tracking System

Emergency response uses a database, the Missouri Environmental Emergency Response Tracking System, as a repository for information related to all hazardous substance emergencies and releases.

Details of each spill or incident are entered into the database by the officer on duty at the time of the spill. Information in the database can be queried as far back as December 1993 and is available on the Internet in a searchable format at www.dnr.mo.gov/asp/esp/meerts/select.asp.



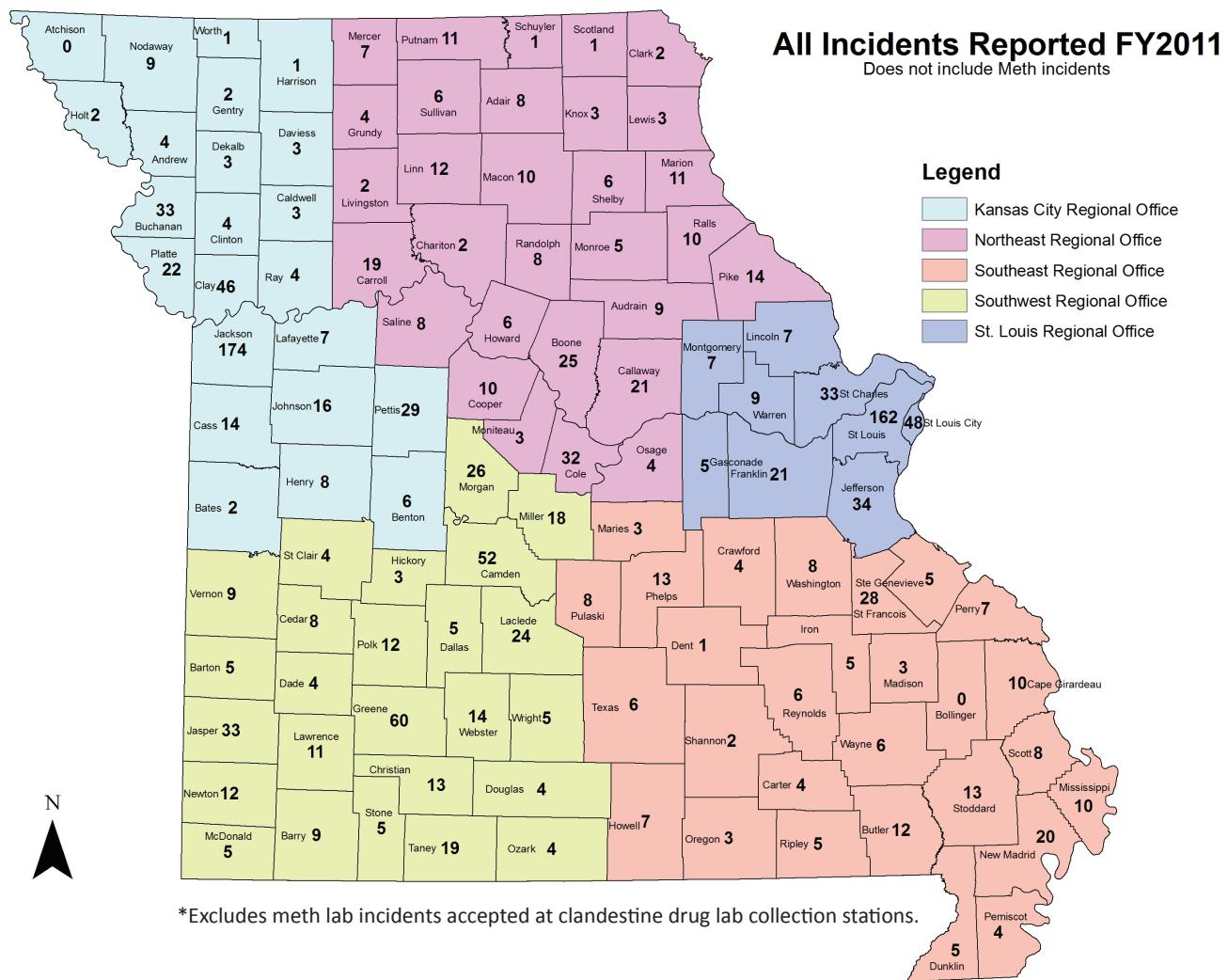
Accomplishments

During Fiscal 2011, the Environmental Emergency Response Section accomplished the following:

- 2,570 incidents (including methamphetamine incidents) were reported through the 24-hour Spill Reporting Hotline.
- Responded to 366 incidents, not including methamphetamine lab incidents.
- Provided disaster response to the St. Louis tornado, Joplin tornado, Sedalia tornado, southeast Missouri flooding, including the Bird's Point levee detonation and Northwest Missouri flooding.
- Purchased homeland security equipment to more effectively respond to mercury releases and improve disaster communications.
- Received and responded to 815 requests for technical assistance.
- Participated in 271 outreach events reaching more than 17,300 citizens and responders.
- Continued the no-cost Mercury Collection Removal and Recycling Program for private Missouri citizens, non-profit organizations and limited educational facilities.

Incident Summary Information

Emergency Response recorded 1,563 incidents* in MEERTS during fiscal year 2011.



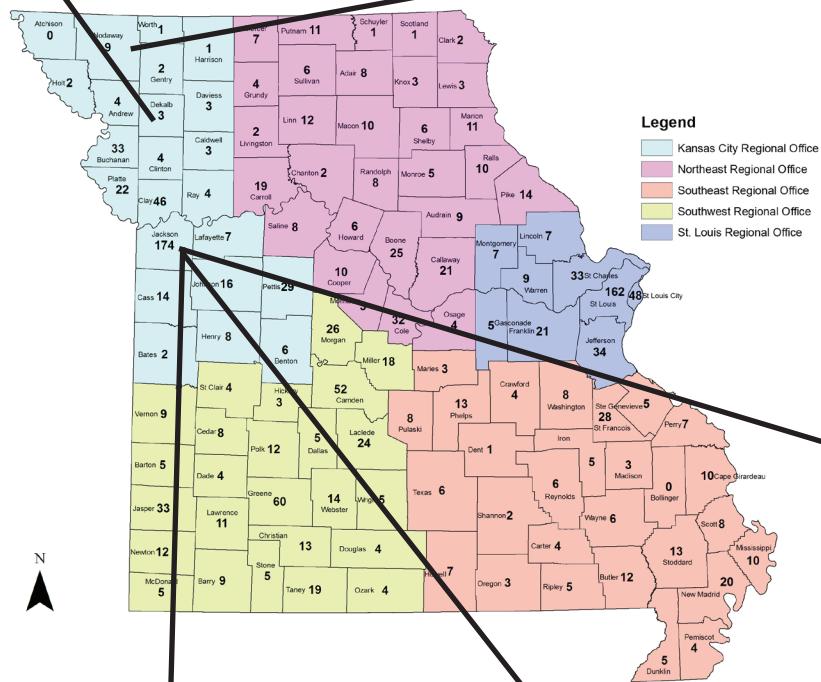
Kansas City Region's Selected Hazardous Material Incidents



Dekalb County - After a bottom valve is damaged on a transport tanker, a blasting agent is released to the parking lot.



Nodaway County - Radiation detected in a load of debris from a manufacturing facility requires careful investigation to isolate the source and potential threat.



Jackson County - A suspicious fire at a salvage yard results in hundreds of burning tires producing heavy black smoke.



Jackson County - More than 60 five-gallon buckets of paint or paint waste were dumped in a remote area.



Jackson county - A serious train derailment results in a fire that consumed large quantities of toluene, animal fats, waste oil and diesel fuel.

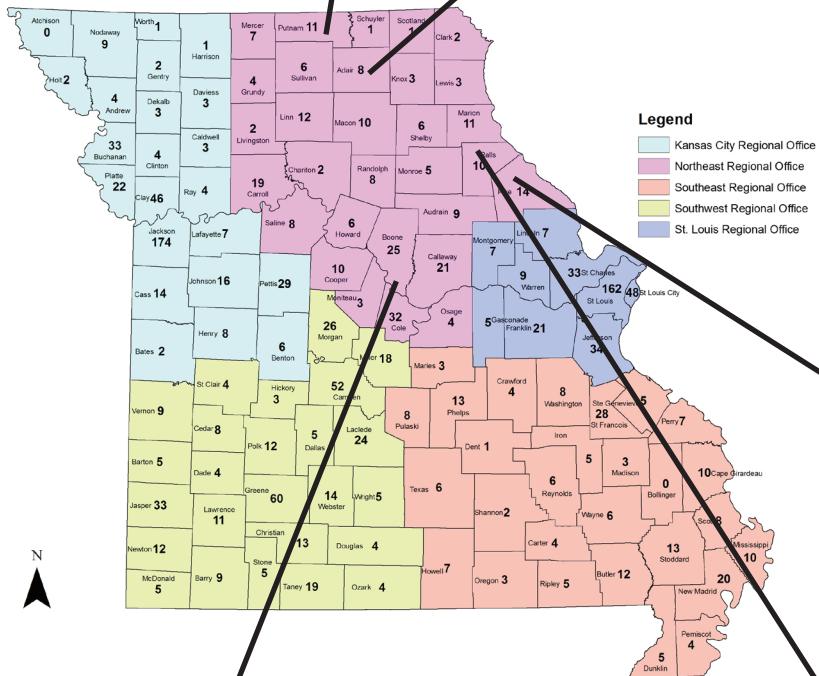
Northeast Region's Selected Hazardous Material Incidents



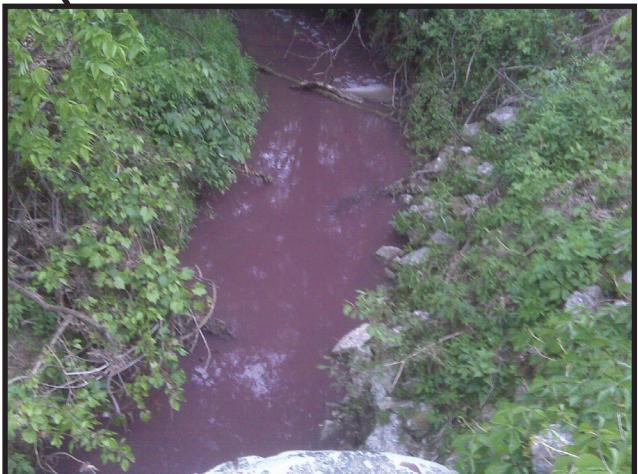
Putnum County - Absorbent pads are used to contain diesel fuel released from a serious injury tractor tanker accident.



Adair County - An interceptor trench is installed at a leaking aboveground storage tank to recover diesel fuel that threatens a drinking water line.



Boone County - Haz mat personnel work to keep diesel fuel from entering Hinkson Creek after a tractor trailer went through a guard rail and into the median of Interstate 70.



Ralls County - A purple creek and fish kill is the result after hog waste overflowed from a lagoon.

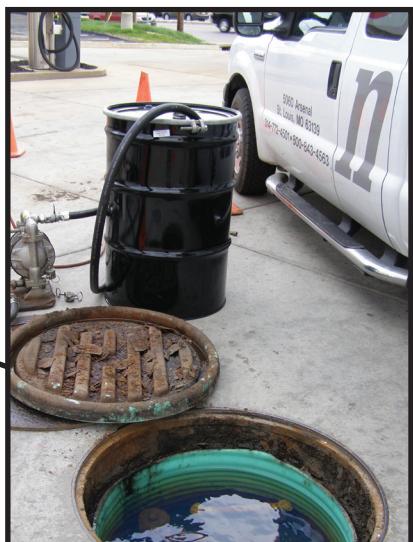
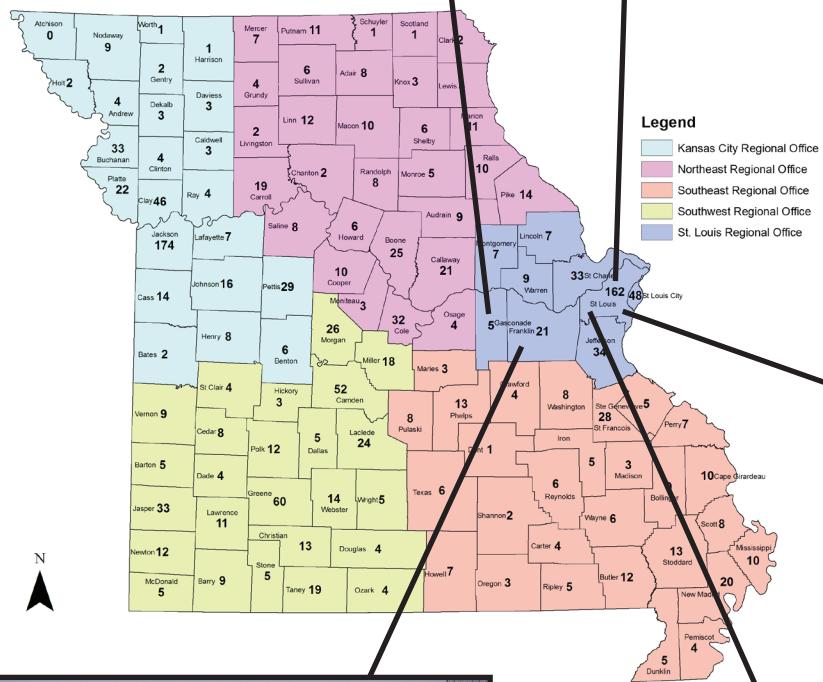
St. Louis Region's Selected Hazardous Material Incidents



Gasconade County - A State On-Scene Coordinator investigates a train derailment in the Missouri River bottoms.



St. Louis City -
A broken mercury thermometer at a private residence requires a thorough cleanup by the department's emergency responders.



St. Louis County - Gasoline is discovered in a sump at a convenience store with underground storage tanks.



Franklin County - A chemical reaction inside a tanker truck results in a release of sulfuric acid vapors and the closure of Interstate 44.



St. Louis County - A tug boat on the Mississippi River sinks with 1,400 gallons of diesel fuel on board.

Southeast Region's Selected Hazardous Material Incidents



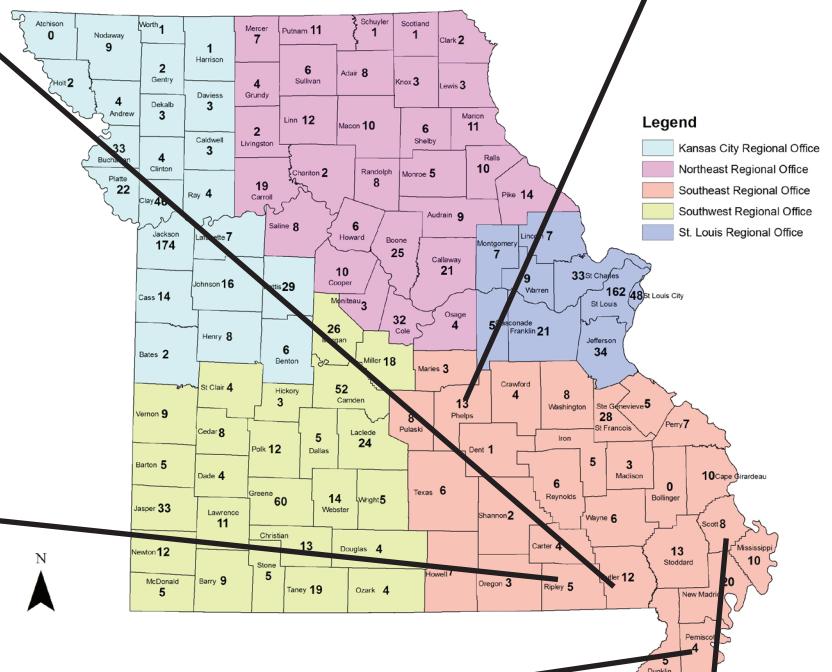
Butler County - A mysterious green material appears after a rain event requiring investigation from a State On-Scene Coordinator.



Phelps County - Maple syrup and diesel fuel are released to a ditch along Interstate 44 from a tractor trailer accident threatening the Little Piney River.



Ripley County - A fire department requests assistance after a private citizen drops off a bottle of the banned pesticide dichloro diphenyl trichloro ethane, or DDT.



Pemiscot County - Containment boom is in place to capture 3,000 gallons of diesel fuel should the fuel tank fail aboard a sunken tug on the Mississippi River.



Scott County - A drum marked "radioactive" appears overnight in a median on Interstate 55 requiring an immediate investigation by State On-Scene Coordinators.

Southwest Region's Selected Hazardous Material Incidents



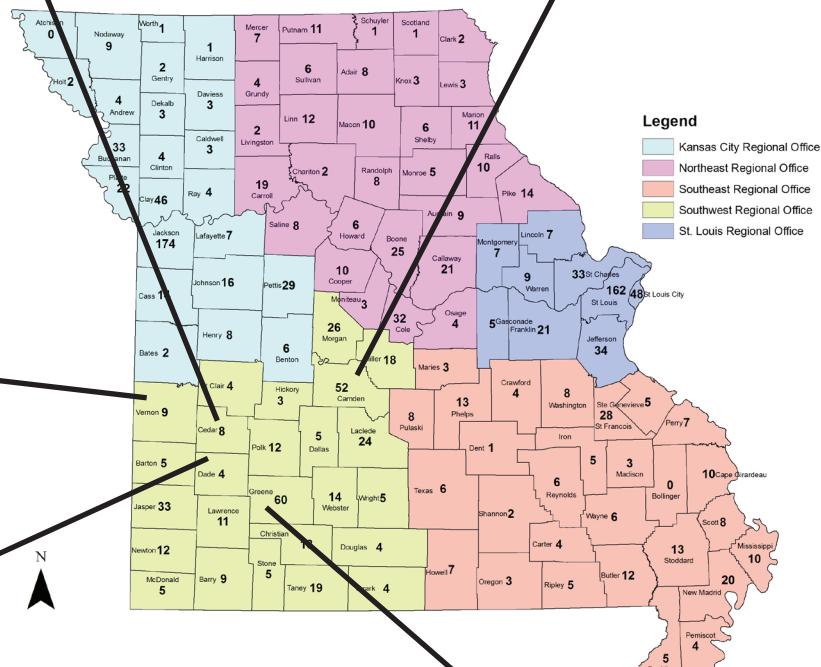
Cedar County - A tractor tanker overturns on Highway 32 releasing hot road oil in excess of 100 gallons to the ditch.



Camden County - An underflow dam is installed to prevent gasoline from a convenience store's leaking aboveground storage tank system from migrating further downstream.



Vernon County - A blow out of a production well resulted in a release in excess of 50 barrels of crude oil from a pipeline.



Dade County - A tractor trailer crashed and caught fire resulting in a 7,700 gallon release of denatured alcohol.

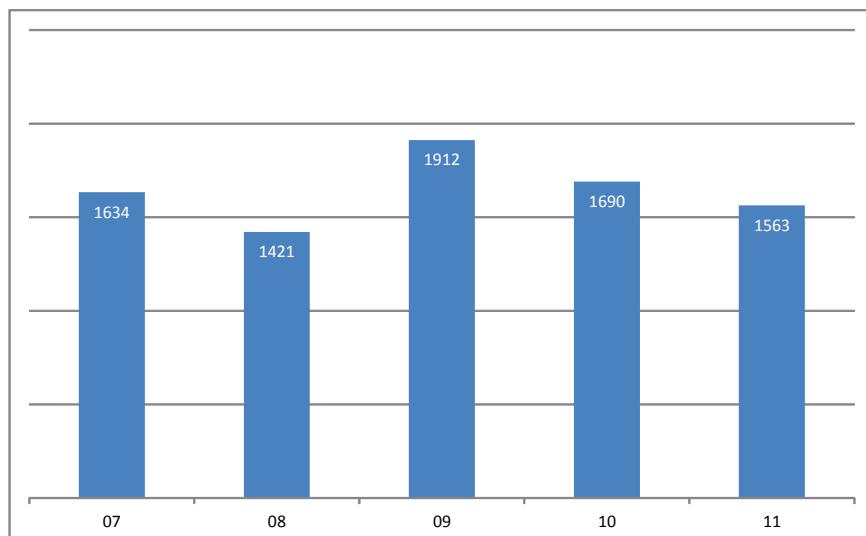


Greene County - Cleanup personnel remove some of the 1,500 gallons of diesel fuel released at the rail yard.

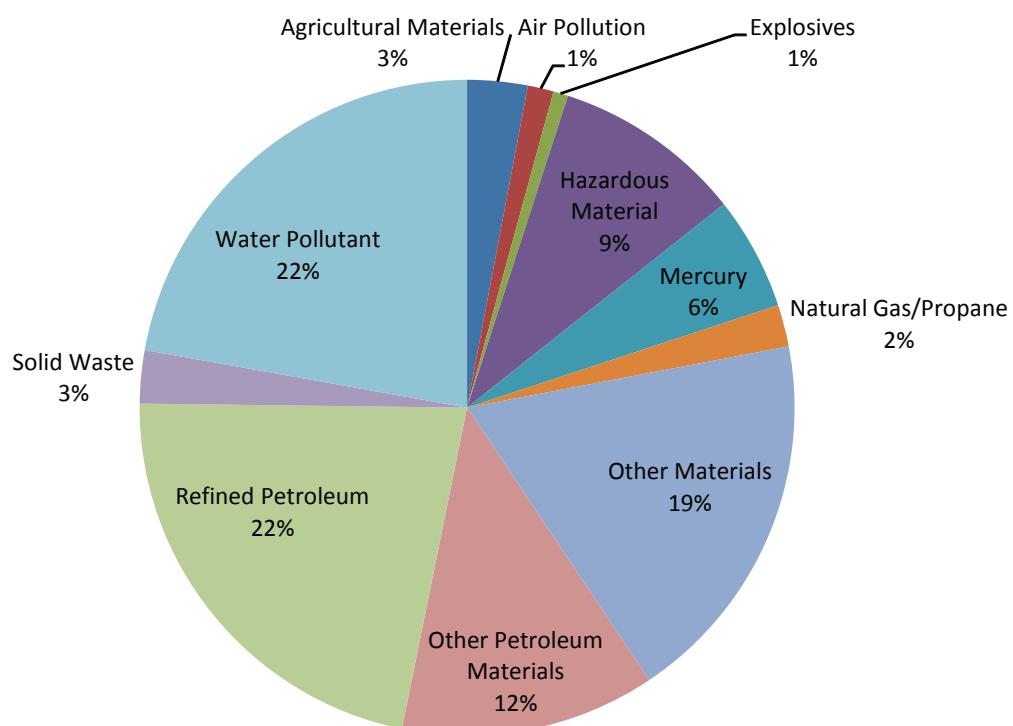


The graphs below illustrate the number of incidents during the last five fiscal years and the type of materials involved in fiscal 2011 incidents by percentage.

Number of Incidents Fiscal year 2007 - 2011



Fiscal 2011 Incident Material Categories



Major Accomplishments Achieved in Response to Southeast Missouri

Flooding:

- Environmental Services Program, Environmental Emergency Response integrated the Missouri Department of Natural Resources into the local response effort by providing support staff to the local Multi-Agency Coordination Center. Emergency response staff provided a leadership role in the establishment and functionality of the Multi-Agency Coordination Center to support local efforts. Staff took the lead role in providing information back to the State Emergency Management Agency during the conference calls.
- Emergency Response staff mobilized and coordinated the effort with the Missouri National Guard to assess the entire Bird's Point floodway for potential hazardous materials that could become an environmental hazard or danger to public health during the flood event prior to detonation.
- Emergency Response staff coordinated efforts with the Environmental Protection Agency and Missouri State Contractors to facilitate the removal of thousands of gallons of petroleum based products. Potentially dangerous agriculture chemicals were mobilized to several other areas. Staff, along with the National Guard, secured or tethered numerous propane tanks so they would not become a potential threat to barge traffic on the Mississippi River.
- Emergency Response staff provided logistical support by delivering flood water pumps to various communities in need. Staff also provided logistical support by providing necessary sleeping cots to a nearby shelter.
- After the water receded, emergency response staff coordinated efforts to assess the floodway for any dangerous orphaned containers left behind because of the flooding. After the assessment was completed, staff worked closely with Environmental Protection Agency to remove orphaned containers inside the Bird's Point floodway, as well as, the Black River area in Butler County and Big Oak Tree State Park in Mississippi County.

Disaster Coordination Efforts Following May 22 Joplin Tornado:

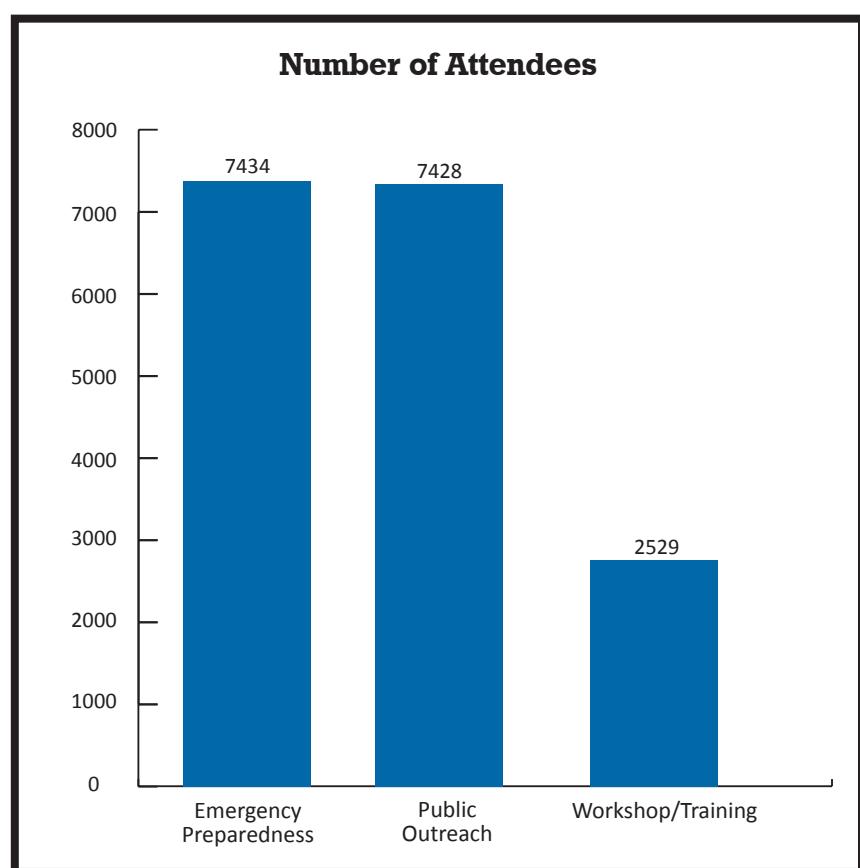
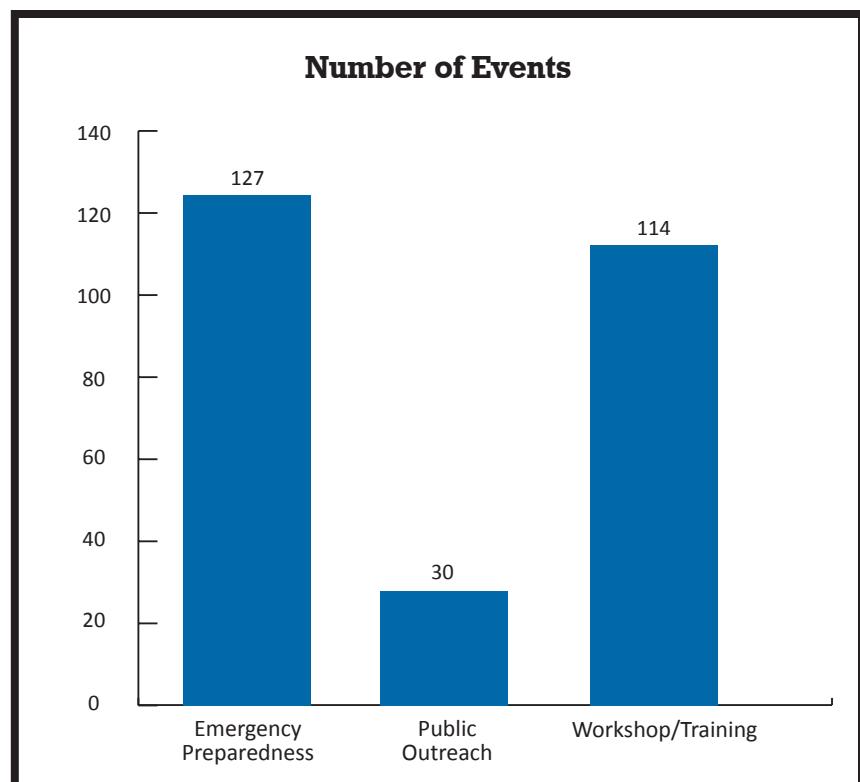
- State On-Scene Coordinators immediately deployed to Joplin the night of the tornado to support search and rescue efforts and continued to maintain an active presence there to coordinate activities on behalf of the department and support the response and recovery efforts.
- Emergency responders were assigned as lead to coordinate the department's efforts in support of the affected communities. Responders identified and managed obstacles to response and recovery operations.
- Regularly facilitated communication among stakeholders with key department staff to address issues.
- Kept department management apprised of progress through daily briefings and detailed weekly summaries about actions and issues in Joplin.
- Examples of issues addressed and managed included coordinating early with the Environmental Protection Agency about management of hazardous materials, household hazardous wastes, white goods and e-goods; requesting air sampling support; managing infectious waste collection and disposal; managing waste tire collection and disposal; establishing streamlined processes for clearing sites for use as temporary housing and critical infrastructure from environmental concerns; establishing streamlined process for obtaining permits to support debris management during response and recovery; conducted assessments very early at regulated facilities to determine its status; oversight and management of multiple hazardous substance release cleanups resulting from the tornado; provided staffing to the local emergency operations center to support and provide subject matter expertise to local officials; and established a command post for operations and coordinated with the Missouri National Guard.

Public Outreach

The Emergency Response Section works diligently to develop and advance working relationships with local, state and federal partners. It is extremely important to share our mission and to understand the roles and responsibilities of these various agencies before environmental emergencies occur in their jurisdictions.

It is equally important to educate, inform and interact with the general public, school children and other parties to further their understanding of their role in protecting the environment and the mission of emergency response.

In fiscal 2011, the section reached an estimated 17,391 individuals at 271 different events including an Environmental Emergency Response booth at the Missouri State Fair, local emergency planning committee meetings, regional homeland security oversight committee meetings, career fairs, Earth Day events, and other local, regional and statewide exercises and training events.





Environmental Emergency Response Section Field Services Unit Summary Report

Field Services Unit staff provide field support to the department's Hazardous Waste Program. Unit personnel have the training, experience and equipment to conduct field investigations that involve collection and analysis of various environmental media and potential hazardous wastes at Superfund sites, Resource Conservation and Recovery Act-regulated facilities, leaking underground storage tank sites and emergency response incidents.

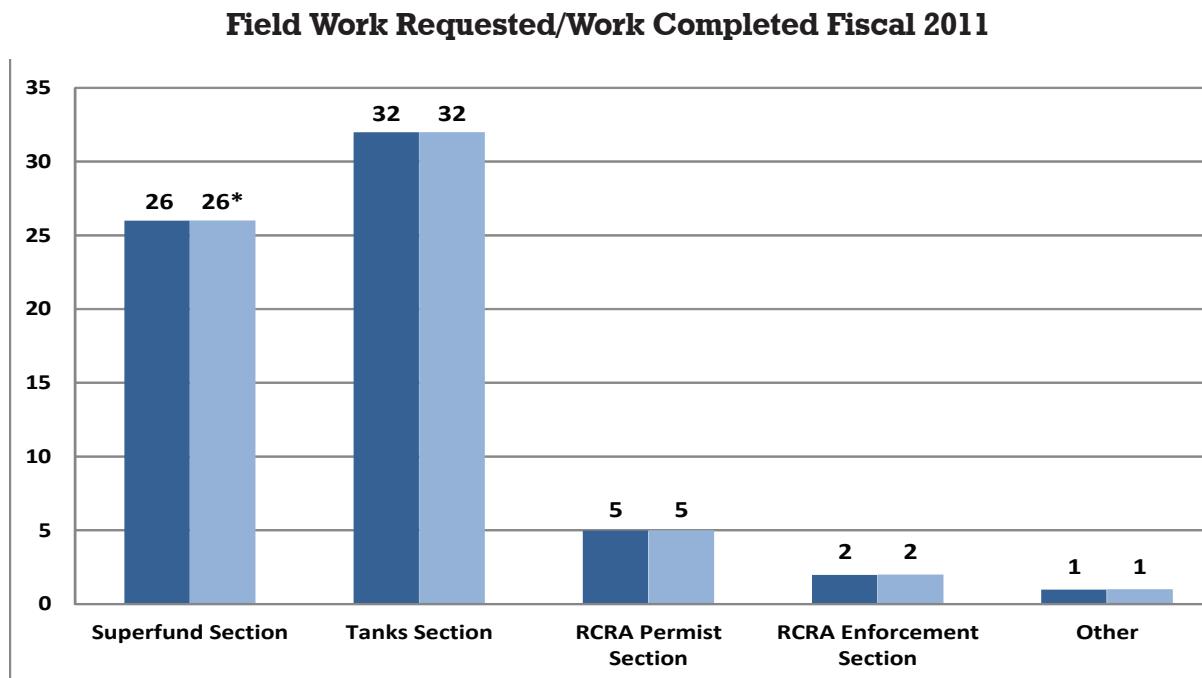
Accomplishments

In fiscal 2011, staff conducted the following field investigations at various locations throughout the state:

- Twenty-six sampling investigations at Superfund sites including old plating facilities and historic mining areas.
- Thirty-two sampling investigations at leaking underground storage sites when petroleum products were the contaminants of concern.
- Five Resource Conservation and Recovery Act operation and maintenance field audits where staff critiqued the field sampling and analysis procedures followed by the regulated community and collected split samples to verify the levels of contaminants found in groundwater.
- Two sampling investigations at Resource Conservation and Recovery Act-regulated facilities to assist in characterizing hazardous wastes that were generated on-site at various types of industries.
- In addition to providing support to the Hazardous Waste Program, staff occasionally assist other programs or divisions within the department when specialized sampling techniques and equipment are needed to help solve environmental problems.
- Field Services Unit staff are housed within the Environmental Emergency Response Section and help provide field sampling support as needed for emergency response incidents that occur throughout the state. Consequently, staff are not only sampling experts, but are also cross-trained as environmental emergency response duty officers and state on-scene coordinators for the department.



The Field Services Unit is often requested to aid other sections in conducting field investigations. The following graph illustrates the number of work-related requests by sections and work completed by the unit.



* Five Superfund Section work requests were made towards the end of Fiscal 2011 and were completed in the beginning of FY2012.



Environmental Emergency Response Section Methamphetamine Initiatives Summary Report

The Clandestine Drug Lab Collection Station Program was created in 1998 in partnership with local fire service and law enforcement agencies to give narcotics officers a place to safely, efficiently and legally store seized clandestine drug lab (primarily methamphetamine) solid and hazardous waste, precursors and other manufacturing materials pending proper management and disposal.

The Missouri Department of Natural Resources and the Missouri State Highway Patrol have partnered since 2000 to deliver a 40-hour Hazardous Waste and Emergency Response for Methamphetamine Laboratories training course. Through lectures and practical exercises, participants receive necessary training to enable them to be certified by their employer to enter and dismantle clandestine methamphetamine laboratories. Since 2000, 37 training courses have been delivered reaching 1,009 participants.

The Environmental Emergency Response Section developed and administers the Clandestine Drug Lab Collection Station Program, provides supplies and equipment to law enforcement agencies and collection state operators; partners with the Missouri State Highway Patrol to deliver methamphetamine lab related health and safety, hazardous materials training state-wide, and disposes of collected meth lab materials.

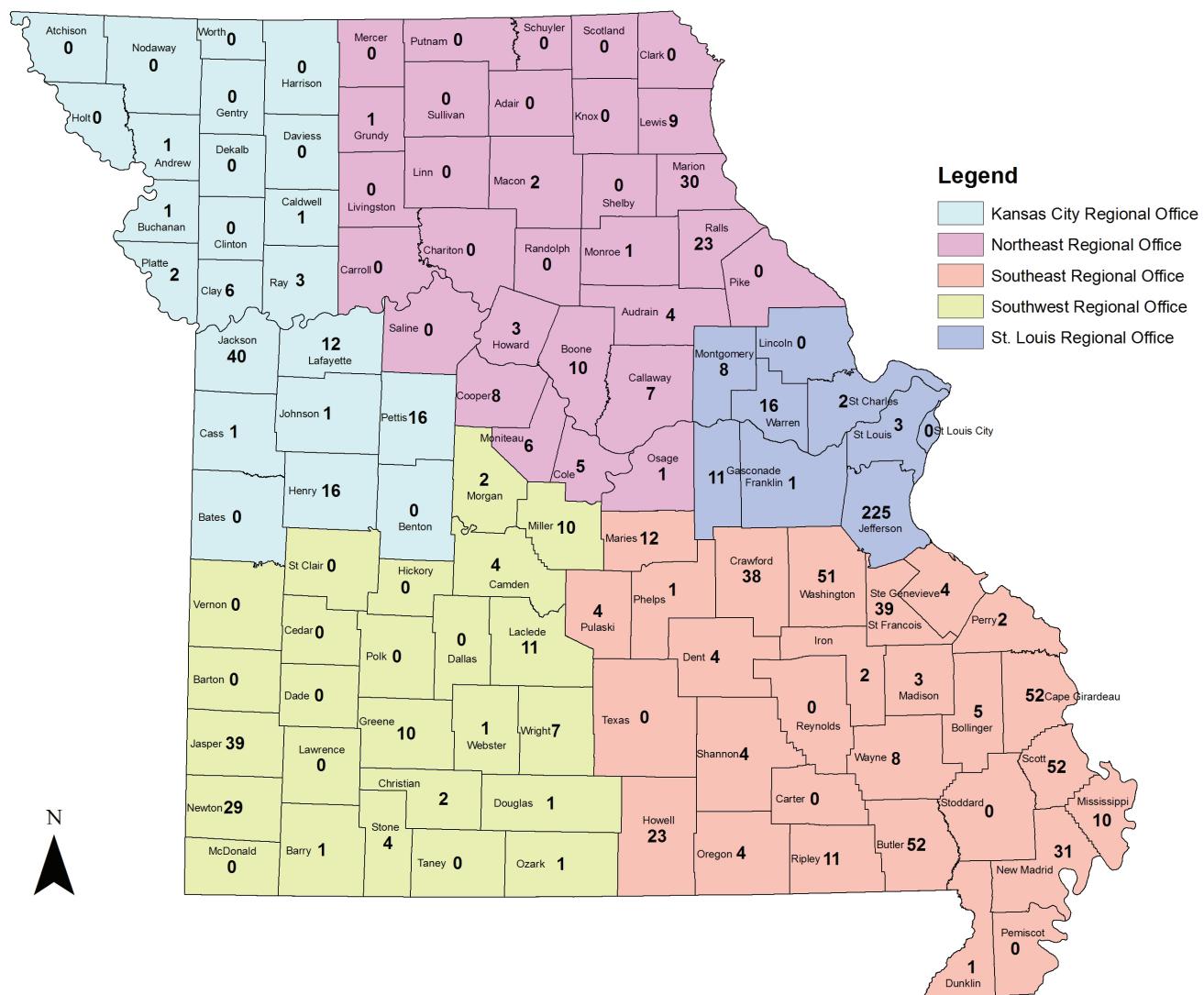
Methamphetamine Clandestine Drug Lab Collection Stations



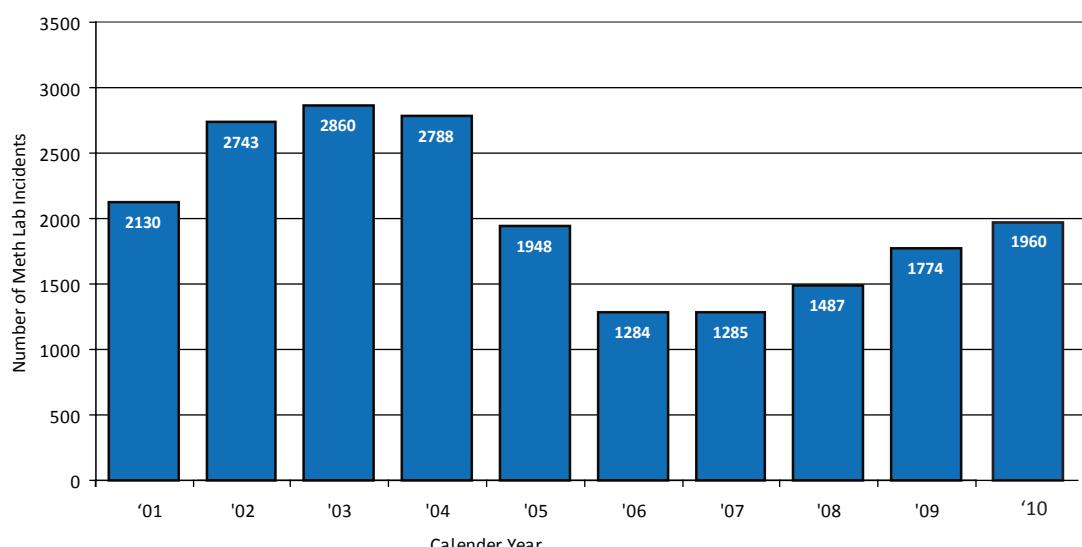
Accomplishments

In fiscal 2011, there were 18 authorized collection stations statewide, handling 1,007 reported meth-related incidents, including 757 methamphetamine labs processed at these collection stations. The following maps, graphs and charts illustrate the locations of the clandestine drug lab collection stations, methamphetamine lab incidents per county, the number of meth lab incidents from calendar year 2001 through 2010 and the disposal categories of the 22,934 pounds of materials processed from the methamphetamine incidents in fiscal 2011.

Methamphetamine Lab Incidents Reported in FY2011 by Counties within Department Regions

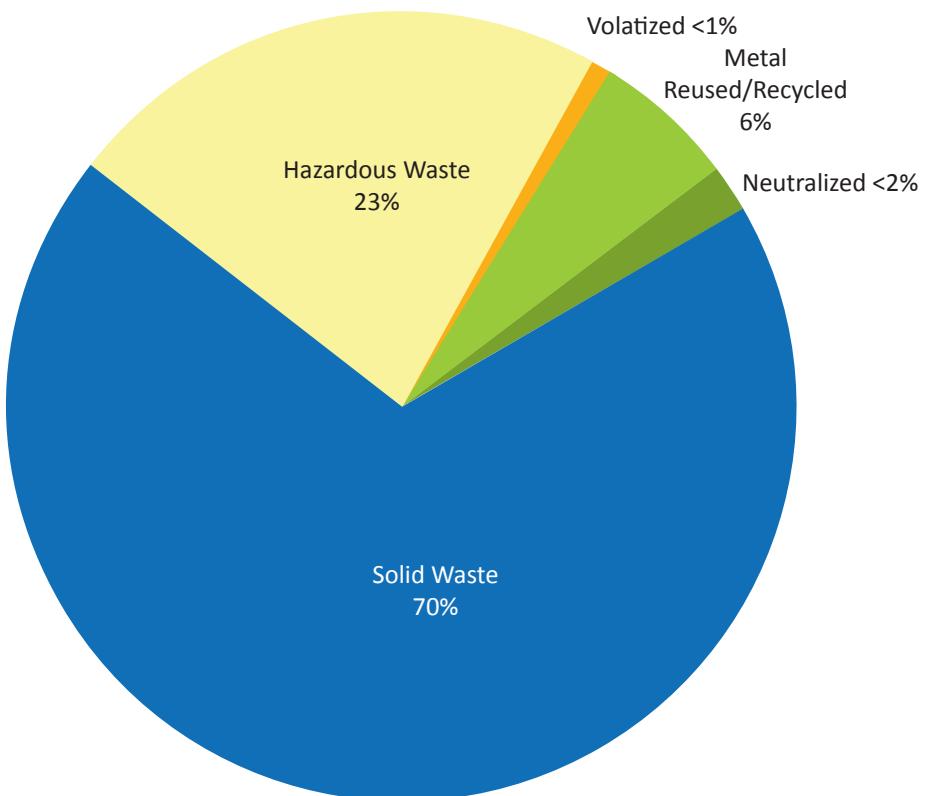


Missouri Methamphetamine Lab Incidents



Collected Methamphetamine Lab Materials Disposed in FY2011

Methamphetamine Lab Material Disposal Categories	Pounds of Material
Neutralized	350
Metal Reused/Recycled	1,361
Volatilized/Other	60
Hazardous Waste	5,204
Solid Waste	15,959
Total Materials Processed	22,934



Methamphetamine Supplies and Equipment Distribution

Items are provided at no cost to law enforcement agencies so they may safely enter and dismantle or otherwise respond to meth lab incidents. Items are also provided to collection station operators to properly manage clandestine drug lab chemicals and debris.

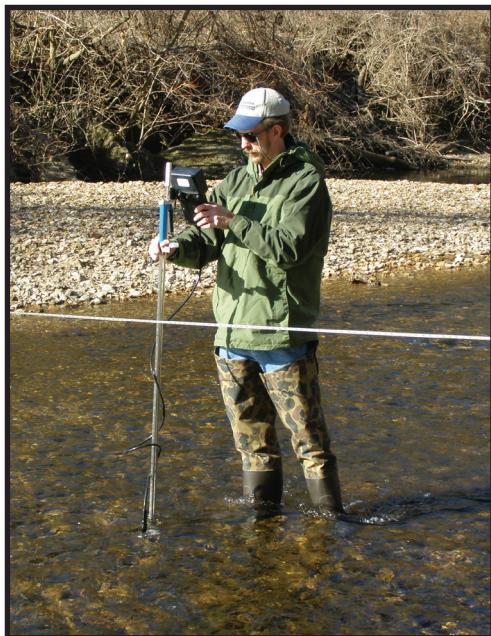
Supply items provided include chemical protective coveralls, air purifying respirators and cartridges, gloves and boot covers, overpacks and containers, pH paper, safety glasses and goggles, transportation labels, sample media, absorbent material, etc.



Methamphetamine Training in Fiscal 2011

One 40-hour Hazardous Waste and Emergency Response for Methamphetamine Laboratories class with approximately 21 participants.

- Five 8-hour Hazardous Waste and Emergency Response for Methamphetamine Laboratories re-certification classes with approximately 18 participants per class.



Water Quality Monitoring Section Summary Report

The Environmental Services Program's Water Quality Monitoring Section is responsible for assessing the biological health of Missouri's rivers and streams, and monitoring water and sediment quality throughout the state. The section includes the aquatic biological assessment and water monitoring units. The Water Quality Monitoring Section works in support of the Water Protection Program.

Accomplishments

In fiscal 2011 the section's units accomplished the following:

Aquatic Biological Assessment Unit

Biological assessments are evaluations of the condition of water bodies using surveys and other direct measurements of resident biological organisms, such as macroinvertebrates, fish and plants. Biological assessment results are used to answer the question about whether water bodies support the survival and reproduction of desirable fish, shellfish and other aquatic species.

Conducted biological assessments and collected 70 biological samples from the following 15 streams.

Waterway	County	Waterway	County
Beef Branch	Newton	Tributary to Hickory Creek	Davies
Big Muddy Creek	Davies	Tributary to Mineral Fork	Washington
Blackberry Creek	Jasper	Tributary to No Creek	Grundy
Cedar Creek	Boone, Callaway	Pond Creek	Washington
East Fork Black River	Reynolds	Sandy Creek	Putnam
Jacobs Branch	Newton	Shibboleth Creek	Washington
Little Beaver Creek	Phelps	Taum Sauk Creek	Reynolds
Owl Branch	Grundy		

A total of 111,959 macroinvertebrate taxa determinations were made in fiscal 2011, bringing the total count in the database to 1.69 million since 1994. Staff members documented two taxa that were previously unknown in Missouri and are collaborating with Missouri Department of Conservation staff to publish these findings in a peer-reviewed journal.

- Supported the Water Protection Program with biological, habitat and sediment assessments of five 303(d) listed streams. Section 303(d) of the Clean Water Act and Environmental Protection Agency regulation 40 CFR Section 130.7(d) (1) published in July 1992, requires each state to submit a total maximum daily load priority list to the Environmental Protection Agency.
- Participated in a workgroup to develop nutrient criteria for rivers and streams. Supported the Water Protection Program with nutrient criteria and the assessments of nutrient data from reference streams and statewide nutrient data for development of nutrient criteria for rivers and streams.
- Supported the Water Protection Program with assessment of biological surveys collected by contractors to assess a facility's temperature effect on Little Muddy Creek in Pettis County.

Good Water Quality Indicator - Mayflies in the taxonomic family Baetidae are sensitive to organic pollutants and their presence is indicative of good water quality.



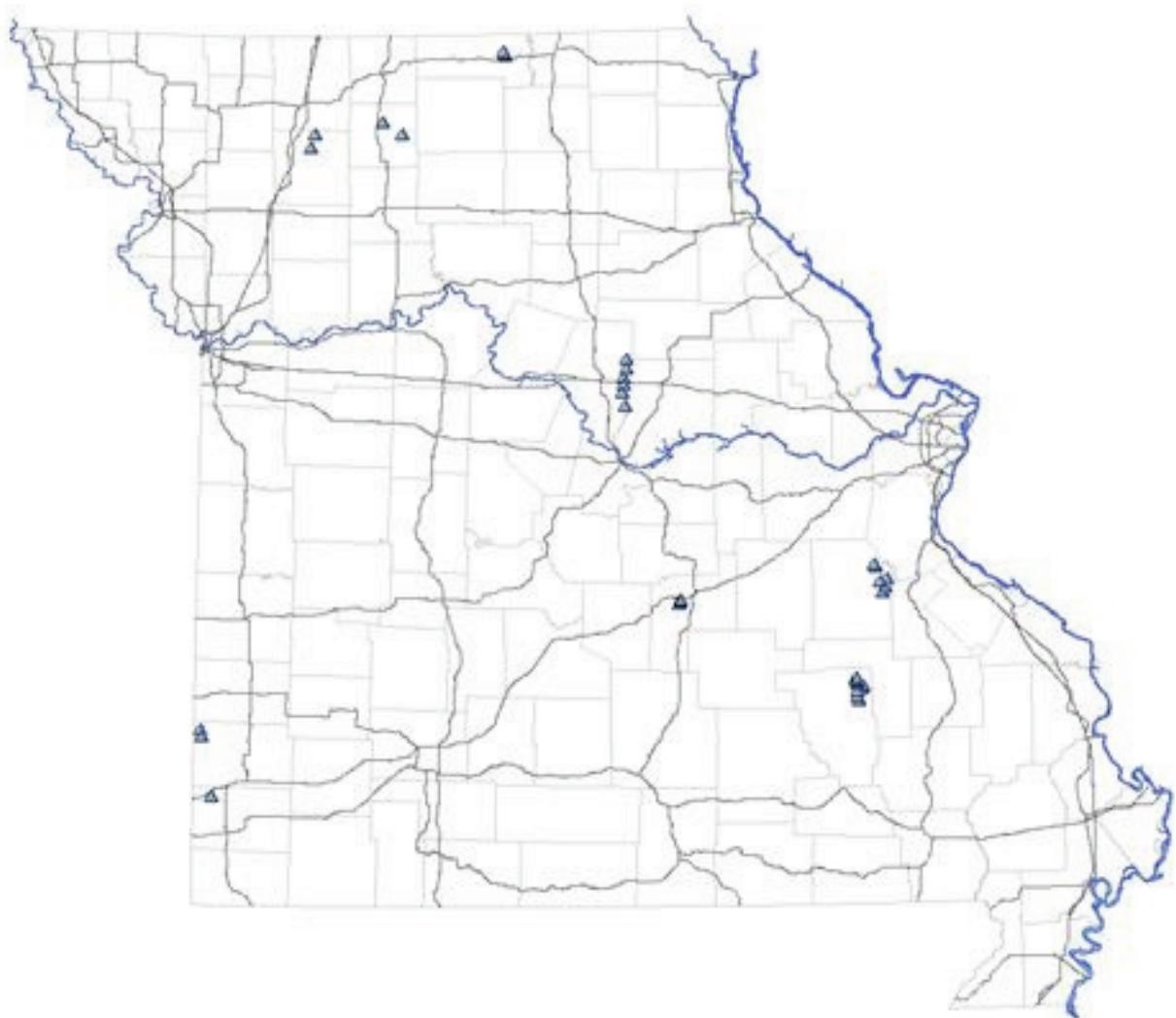
Potential Poor Water Quality Indicator - Midge larvae (Chironomidae) are generally more tolerant of organic pollutants than many other aquatic macroinvertebrates.



- Continued to conduct intensive biological assessments to determine the long-term impact and recovery of the East Fork Black River from the catastrophic failure of the upper Taum Sauk reservoir.
- Supported the Water Protection Program with biological assessments of streams impacted by historical mining.
- Supported the Water Protection Program with a biological assessment of Blackberry Creek, a receiving stream for Empire Electric's Asbury Power Plant. In question, is whether the power plant's cooling water, which has high concentrations of sulfates and chlorides, is negatively affecting the Blackberry Creek aquatic community.

Biological Assessment Stream Locations for Fiscal 2011

Map created by Department Water Quality Monitoring staff





Water Quality Monitoring Unit

- Completed quality assurance audits at 20 solid waste landfills that included both groundwater and landfill gas monitoring from more than 70 monitoring locations.
- Collected 40 fish tissue samples from 26 sites on Missouri lakes and streams to determine contaminant levels in the fish tissue. The data collected is shared with the Environmental Protection Agency and the Missouri Department of Health and Senior Services for determination of human health advisories and for monitoring trends in contaminant levels.

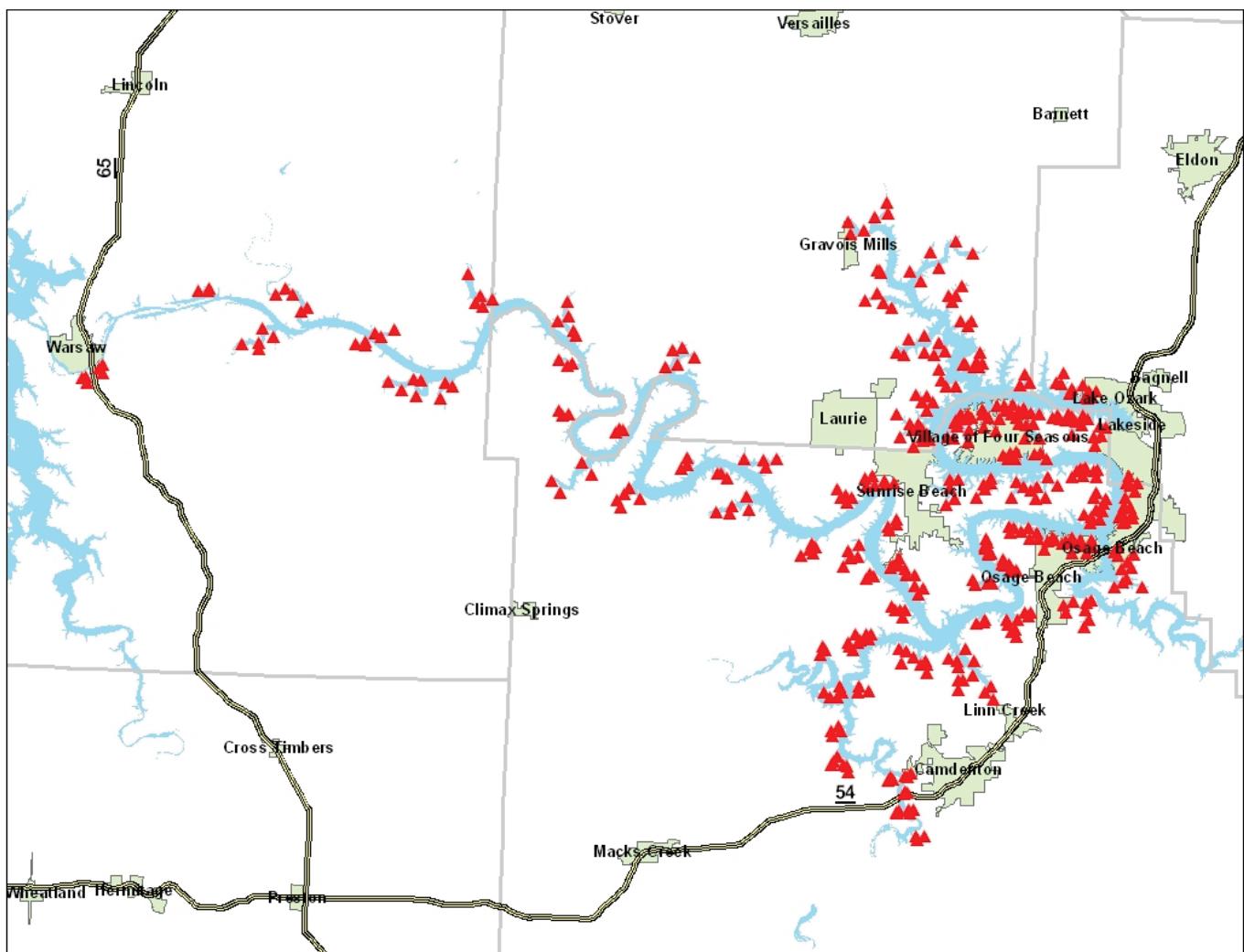
Landfill	County
3M Nevada Special Landfill	Vernon
Farmers Stone Products Landfill	Livingston
Lamar Sanitary Landfill	Barton
Missouri Pass Sanitary Landfill	St. Louis
City of Fulton Sanitary Landfill	Callaway
Jefferson City Sanitary Landfill	Cole
Moberly Landfill	Randolph
Veolia Maple Hill	Macon
Prairie View Landfill	Barton
St. Joseph Sanitary Landfill	Buchanan
Bridgeton (Westlake) Sanitary Landfill	St. Louis
Centropolis Sanitary Landfill	Jackson
Ellis Scott Sanitary Landfill	Henry
Fred Weber Sanitary Landfill	St. Louis
Veolia Oak Ridge Sanitary Landfill	St. Louis
Lee's Summit Sanitary Landfill	Jackson
Peerless Park Demolition Landfill	St. Louis
Renfro Sanitary Landfill	Stone
Struckhoff Sanitary Landfill (City of Washington)	Franklin

Waterway	County	Waterway	County
Black River	Butler	Hunnewell Lake	Shelby
Bourbeuse River	Franklin	Indian Hill Lake	Crawford
Flat River Creek	St. Francois	Missouri Electric Pond	Cape Girardeau
Little Dry Fork	Phelps	Norfork Lake	Ozark
Little River Ditches	Dunklin	Palmer Lake	Washington
Meramec River	St. Louis	Parole Lake	Washington
Muddy Creek	Pettis	Pim Lake	St. Francois
St. John's Ditch	New Madrid	Pomme de Terre Lake	Hickory
Bull Shoals Lake	Ozark	Prairie Lake	St. Charles
Fellows Lake	Greene	Thomas Hill Lake	Macon
Rinquelin Trail Lake	Maries	Wakonda Lake	Lewis
Forest Hill Country Club Lake	Boone	Bethany Reservoir	Harrison
Hulen Lake	Boone	Knox Village Lake	Jackson

- Finished the final phase of the five-year monitoring survey of Lake Ozark for E.coli during the summer recreational season. This project utilized a large group of volunteers from the Lake Ozark Watershed Alliance who conducted the actual water sampling on a monthly basis. Staff provided the training, supplies and analyses. Approximately 300 samples were collected and analyzed in FY2011.



Lake of the Ozarks Sites



- Provided technical assistance to the department's Criminal Investigation Unit about several cases under their review. In this capacity scientific instruments were set up and calibrated for deployment. Data collected may be used by the investigators as evidence or to support various enforcement cases.
- Performed compliance sampling at more than 87 wastewater treatment facilities across the state to ensure compliance with permit requirements. Approximately 150 effluent samples were collected.
- Conducted four waste load allocation surveys on streams receiving effluent from the communities of Windsor Southwest lagoon, Ashland lagoon south, Humansville, Lamar Wastewater Treatment Plant and Bethany Wastewater Treatment Plant. A total of 239 water samples were collected in conjunction with this effort.
- Performed ambient stream sediment monitoring from 10 sites around the state to determine if the level of metals present are sufficient to cause toxicity.
 - Mill Creek, just above Shibboleth Creek, Washington County.
 - Pond Creek at Pond Creek Road, Washington County.
 - Shibboleth Creek, North Tiff, Washington County.
 - Shibboleth Creek, North Hwy E, Washington County.
 - Turkey Creek, below Bonne Terre chat pile, St. Francois County.
 - Logan Creek, below Sweetwater Mine at Hwy B, Reynolds County.
 - Mineral Fork, just above Old Mines Creek, Washington County.

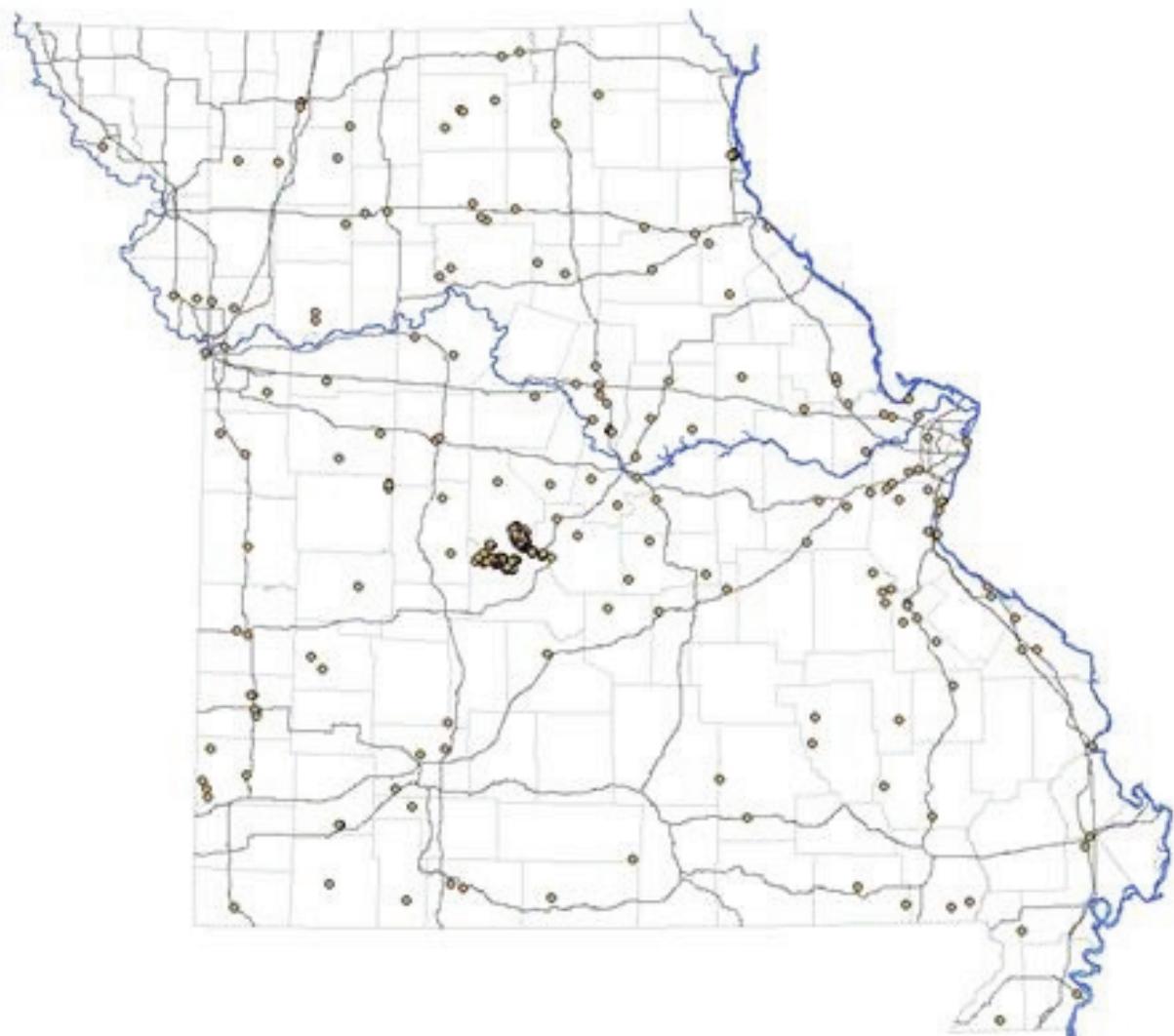


Wakonda State Park Sampling

At each of the following sites, one composite sample, consisting of at least four subsamples, one from each quadrant of the lake, was collected. Samples were composed of medium-sized sand particles or smaller. During sieving, staff captured and bagged any lead shot, which was used for estimating the amount in each lake.

- Wakonda Lake.
- Agate Lake.
- Jasper Lake.

Fiscal 2011 Water Quality Monitoring Sampling Sites



- Provided weekly E.coli analysis of water samples collected from 20 swimming areas located in the department's state parks during the recreation season. Staff completed more than 580 analyses. Swimming areas and sampling results are available at <http://mostateparks.com/beaches/>.

State Park Swimming Area	State Park Swimming Area
Mark Twain – public beach	Pomme de Terre – Hermitage
Crowder – public beach	Pomme de Terre – Pittsburg
Cuivre River	St. Joe – Monsanto
Finger Lakes	St. Joe – Pim
Lake Ozarks #1	Stockton
Lake Ozarks #2	Thousand Hills
Lake Wappapello	Trail of Tears
Lewis and Clark	Truman - public beach
Long Branch	Truman – campground
Watkins Mill	Wakonda

- Monitored approximately 30 streams on a quarterly basis to assess nutrient levels across the state and collected approximately 148 samples in this effort. The data is used by the Water Protection Program in developing nutrient criteria for inclusion into the water quality standards. Streams monitored for nutrients shown in the table below:

Waterway	County	Waterway	County
West Locust Creek	Sullivan County	Lost Creek	DeKalb County
East Locust Creek	Sullivan County	Maple Slough	Mississippi County
North Blackbird Creek	Putnam County	North Fork, South Fabius River	Knox County
Shoal Creek	Putnam County	Spencer Creek	Ralls County
Salt Creek	Chariton County	Barren Fork	Ozark County
Sugar Creek	Harrison County	Burris Fork	Moniteau County
Grindstone Creek	Davies County	Deer Creek	Benton County
West Fork, Yellow Creek	Linn County	Cedar Creek	Benton County
East Fork, Yellow Creek	Linn County	Horse Creek	Cedar County
Charette Creek	Warren County	Little Maries Creek	Maries County
Otter Creek	Wayne County	Petite Saline Creek	Cooper County
Brush Creek	Macon County	Pomme de Terre River	Polk County
Lower Bourbeuse River	Maries County	Richland Creek	Morgan County
Lower North Fork Spring River	Jasper County	Saline Creek	Miller County
Spring Creek	Douglas County		

- Performed five field audits of department staff that regularly collect environmental samples. Field audits validate sample collection methods and technique, checks documentation of proper sample chain of custodices and sample labeling.
- Conducted and coordinated quality assurance and quality control of field meters.
- Conducted updates of standard operating procedures to ensure procedures for all water quality sampling activities in the department are current.



Occupational Safety and Health Consultant Summary Report

The Occupational Safety and Health Consultant is housed within the Environmental Services Program. The consultant primarily oversees safety issues within the Division of Environmental Quality and provides recommendations to the remaining divisions on an as-needed or as requested basis.

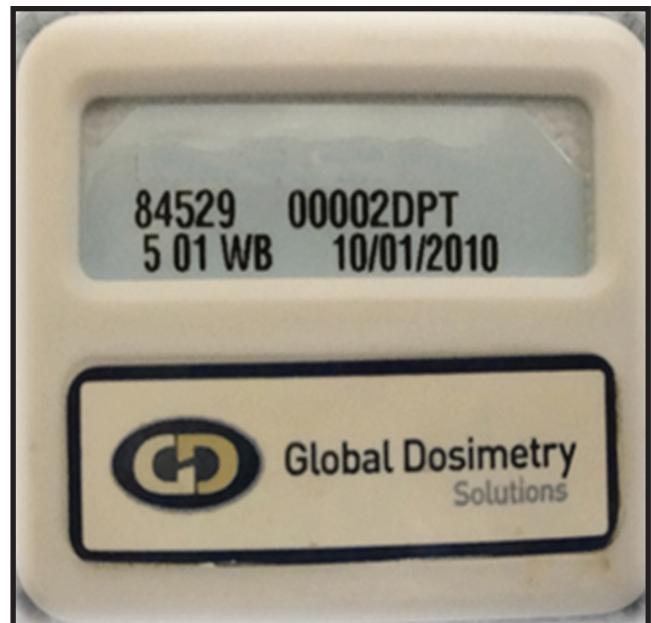
Accomplishments

During fiscal 2011, the Occupational Safety and Health Consultant accomplished the following:

- **Automated External Defibrillators** - In a cooperative effort with the Division of State Park's risk manager, the consultant oversees the management of the automated external defibrillator program. The consultant reviewed the quarterly reports of all department assigned defibrillators (AED) to ensure all were in working order.
- **Emergency Preparedness** - The Consultant assisted during the Joplin tornado response by working at the State Emergency Operation Center. The consultant also filled in for duty officers on the Environmental Emergency Response Spill Reporting Hotline while the majority of responders were in the field managing emergencies.
- **EPA Training** - The consultant is the Environmental Protection Agency coordinator for Hazardous Waste Operations and Emergency Response training, which was funded by the Environmental Protection Agency for the department. In fiscal 2011, more than 364 federal, state, and local employees were trained from more than 12 different agencies. This included two 40-hour Hazardous Waste Operations and Emergency Response level classes and 118-hour refresher courses. The bulk of the courses were held in Jefferson City; one additional refresher course was held in the Macon and Kansas City regions, and two each were held in the St. Louis region and Rolla. This was the last year for Environmental Protection Agency-sponsored training.
- **Medical Monitoring Program** - There were 127 employees in the medical monitoring program in fiscal 2011. This included employees from three separate divisions. The total cost for the fiscal 2011 medical monitoring program was \$70,173. The average cost per visit was \$552.



- **Respiratory Fit Testing** - The consultant oversees the department's respiratory protection program. There are currently 48 Division of Environmental Quality employees active in the program. Each year the consultant uses a Portacount machine to ensure the respirator fits each staff member properly. Staff members are also seen by the medical monitoring contractor to ensure they are physically fit to wear the respirator they are issued. The Consultant is also responsible for ensuring staff members receive proper training for each piece of respiratory equipment they possess and the equipment is taken care of properly.
- **Department Training** - The consultant conducts various safety and hazardous materials response training throughout the year. The safety training includes the following: 40-hour Hazardous Waste and Emergency Response for Methamphetamine Laboratories training course, new employee orientation for all department employees, and safety orientation for Environmental Services Program employees. The Consultant provided Cardiopulmonary Resuscitation/First Aid training for 177 employees In fiscal 2011. The Consultant also conducts hazardous materials refresher training to Environmental Emergency Response staff on an as requested basis. In Fiscal 2010, the Environmental Emergency Response training consisted of ammonia awareness, Level A suit usage, and general safety awareness. In fiscal 2011 the consultant also held basic safety training for field staff in the regional offices.
- **Risk Management Committee** - The consultant served as chair for the department's Risk Management Committee in fiscal 2011.
- **Intranet Safety Site** - The consultant maintains the Intranet safety site for the department by posting general safety information.
- **Thermoluminescent Dosimetry** - Thirty staff were issued a Thermoluminescent Dosimetry badge. Each quarter the consultant receives a report indicating how much radiation each badge has received and records the information into a database. The Consultant verifies each staff member has not received any occupational radiation above the levels outlined in the policy.





Administrative Unit Summary Report

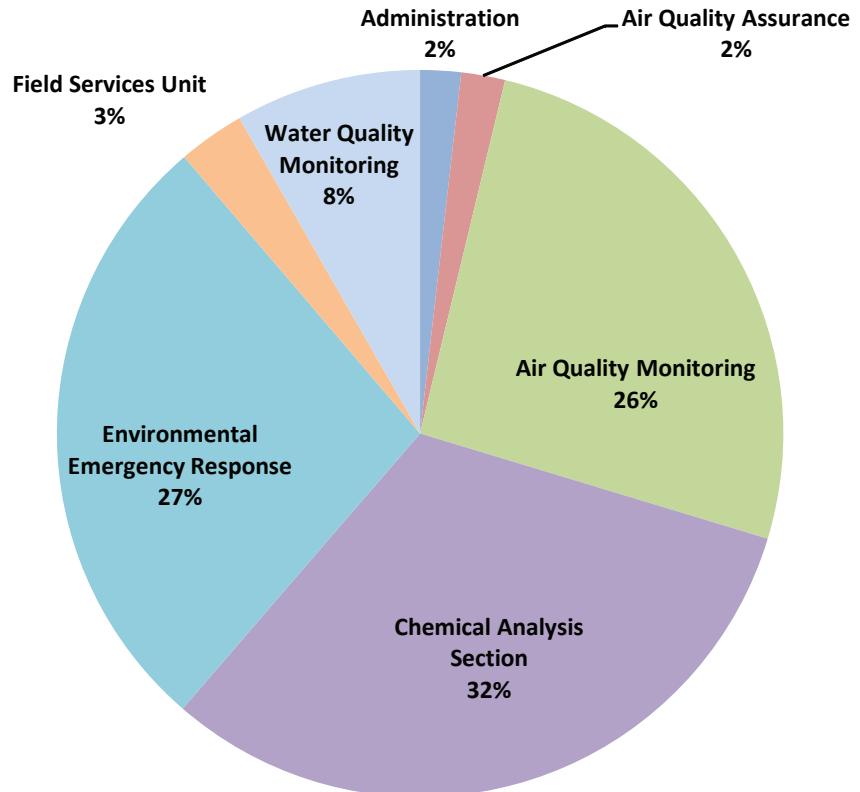
The Administrative Unit is responsible for the Environmental Services Program fiscal and administrative functions.

The program performs work for most Division of Environmental Quality programs, the Division of State Parks, and the Division of Geology and Land Survey. The program also has partnerships with other state departments including the Missouri Department of Conservation, Missouri Department of Health and Senior Services, and the University of Missouri. The diversity of work and funding requires the Administrative Unit to manage more than 70 funding sources each year. The operation of the laboratories and the high volume of field work requires extensive expense and equipment expenditures to support operations.

Summary of Expenses

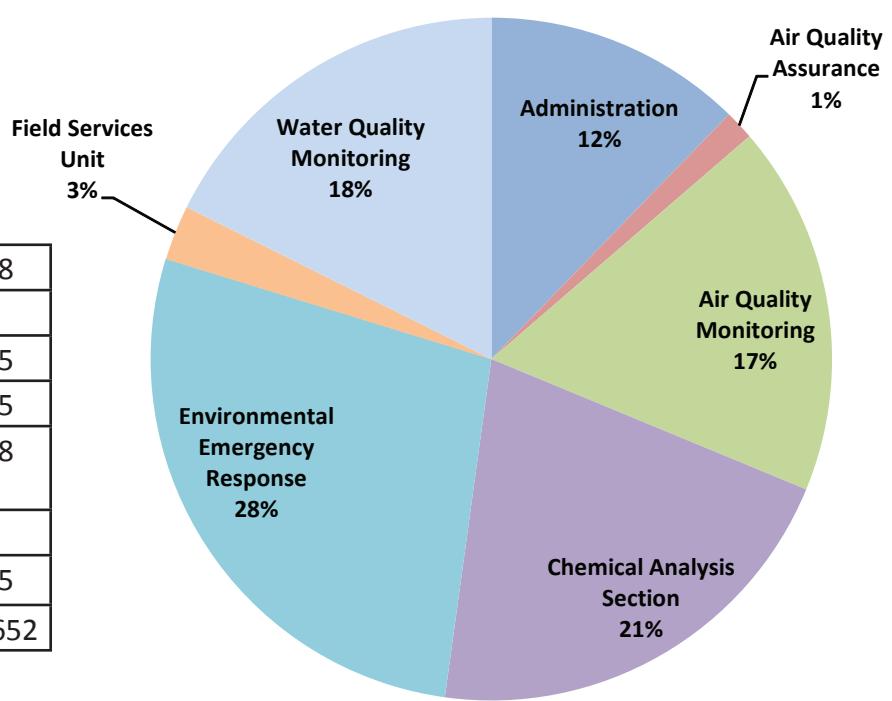
FY2011 Expense and Equipment Expenditures - \$1,836,541

Administration	\$33,258
Air Quality Assurance	\$35,907
Air Quality Monitoring	\$475,803
Chemical Analysis Section	\$581,533
Environmental Emergency Response	\$503,452
Field Services Unit	\$54,379
Water Quality Monitoring	\$152,209
Total	\$1,836,541



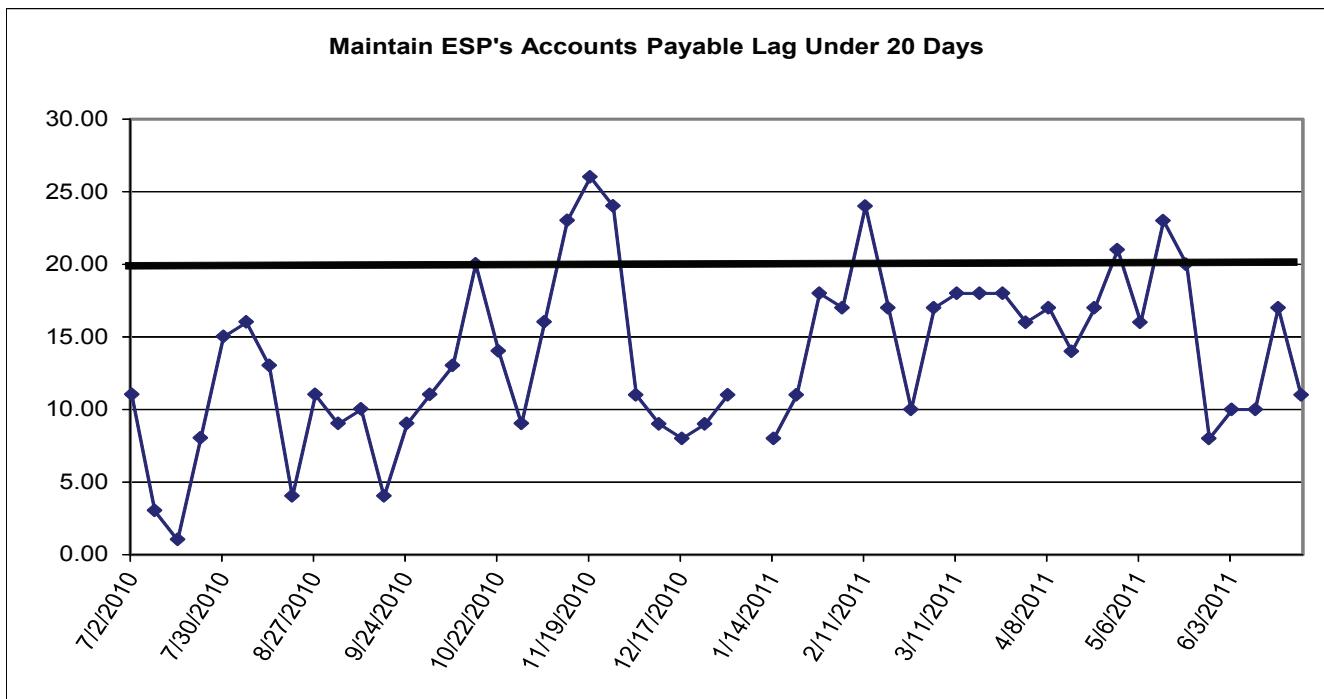
FY2011 Personal Services Expenditures - \$3,623,652

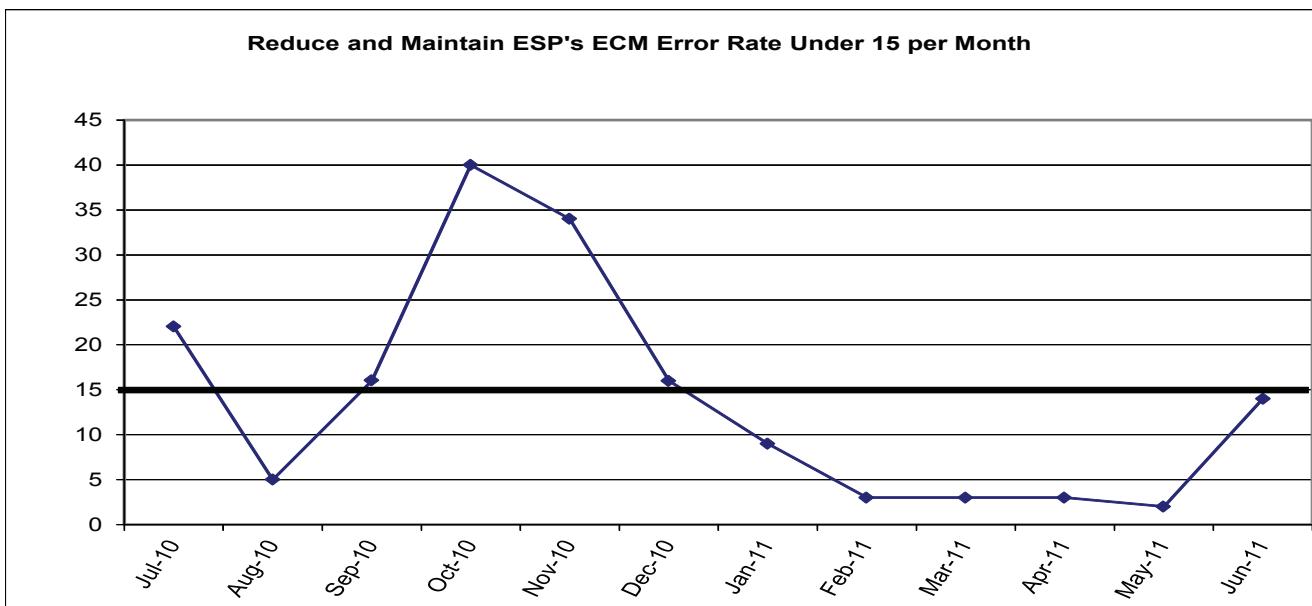
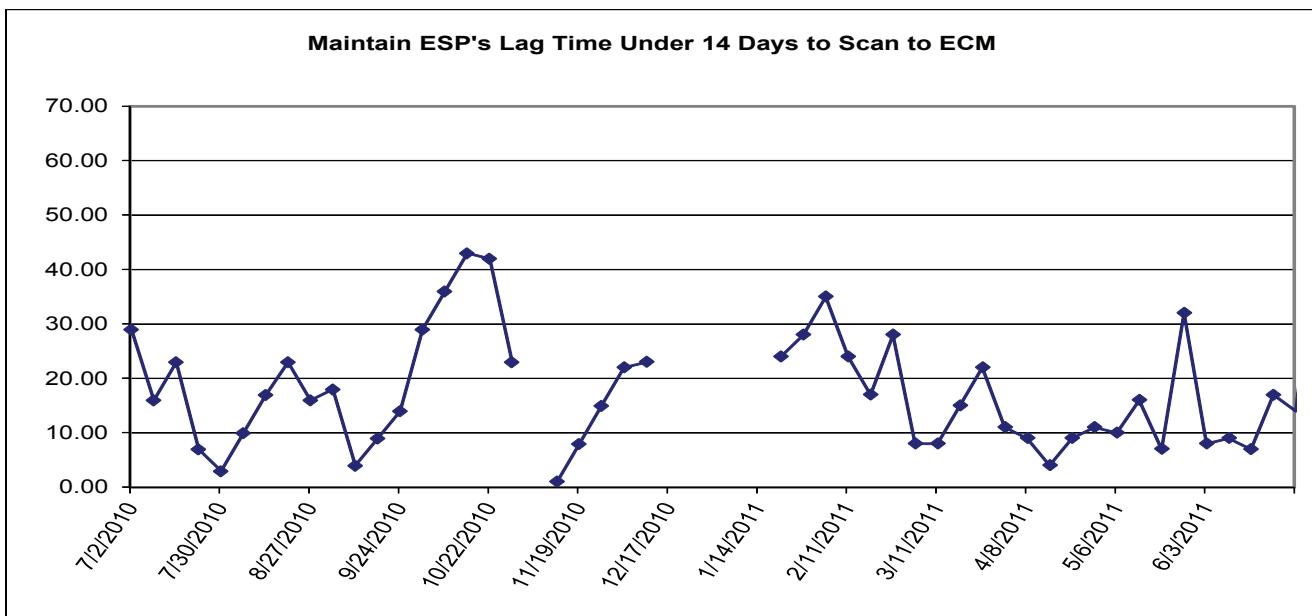
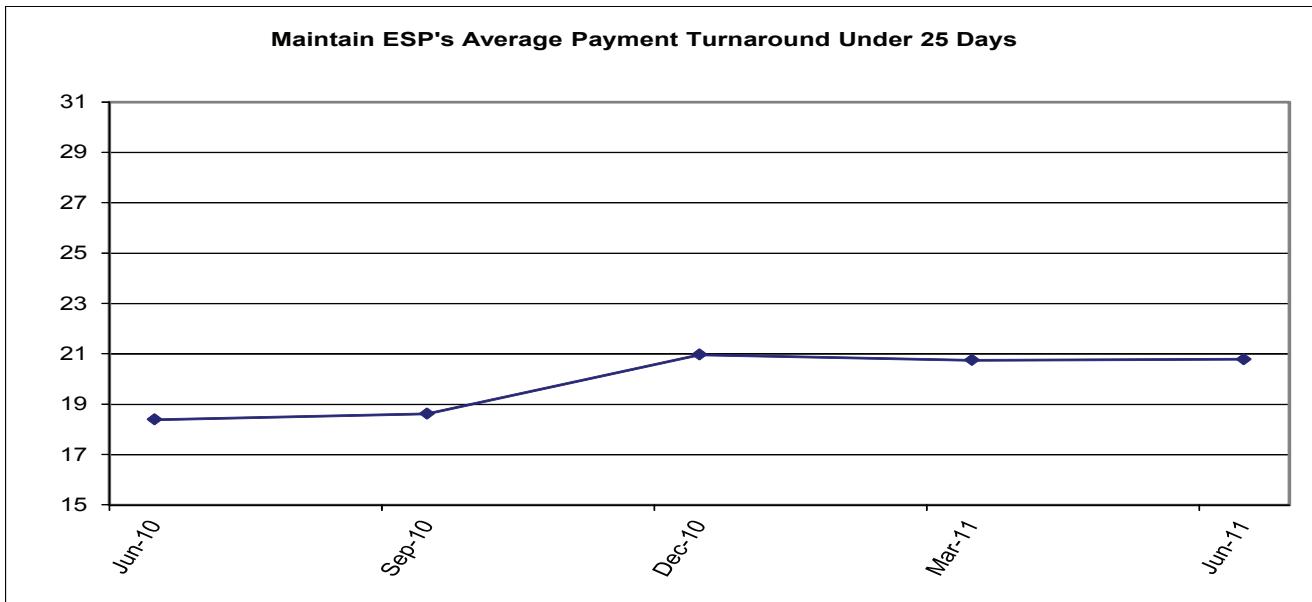
Administration	\$445,138
Air Quality Assurance	\$50,714
Air Quality Monitoring	\$636,085
Chemical Analysis Section	\$758,905
Environmental Emergency Response	\$998,808
Field Services Unit	\$94,377
Water Quality Monitoring	\$639,625
Total	\$3,623,652



Administrative Unit Performance Measures

- Maintain program accounts payable lag under 20 days.
- Maintain program average payment turnaround under 25 days.
- Maintain program's lag time under 14 days to scan to Enterprise Content Management.
- Reduce and maintain program's Enterprise Content Management error rate under 15 per month.





Environmental Services Program Fleet Management

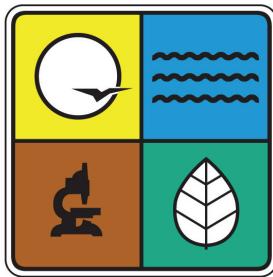


The Administration Unit at the Environmental Services Program maintains a fleet of 34 vehicles used by program staff to complete their missions. Field staff drove 403,327 miles in FY2011 while performing the field work necessary to support the department's environmental efforts.

The program fleet consists of one sedan, two minivans, four specialty vehicles, five dedicated emergency response pick-ups, six fully equipped emergency response vehicles, and 16 pick-ups and sport utility vehicles. The fleet also includes six boats; a Munson Landing craft and three Jon boats for emergency responses, an electro-fishing boat for specimen sampling and a jet boat useful for accessing shallow waterways.



Munson Landing Craft



**MISSOURI
DEPARTMENT OF
NATURAL RESOURCES**

**P.O. Box 176
Jefferson City, MO 65101**

**www.dnr.mo.gov
573-361-4827**